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Font/DA Juggler Plus

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- New HyperCard
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And it's specifically designed to take you from outline to output, without getting you bogged down in details.

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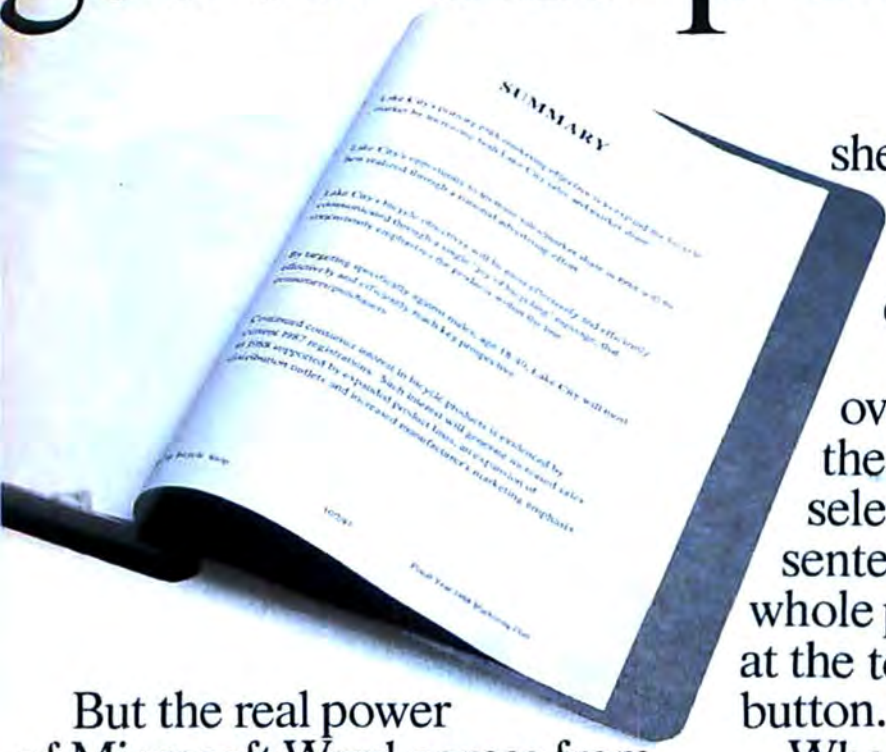
Plus you can preview and adjust page layouts before you print. Customize menus, so the files, fonts and formats you need are always at hand. Even assign Word the time-consuming chore of generating a complete index and table of contents.

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For more speed, Word lets you duplicate all mouse functions from the keyboard.

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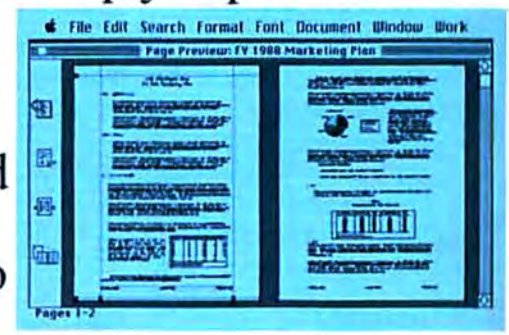
And obvious, but often overlooked time-savers, like the ability to select words, sentences or whole paragraphs at the touch of a button.



What's the difference between Word's built-in spelling corrector and a secretary with a dictionary? How about a couple of hours.

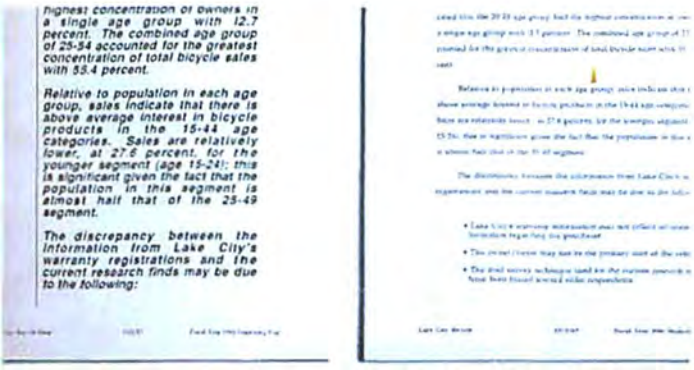
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Ask him to help you put Word to work in preparing your most complicated documents.



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highest concentration of owners in a single age group with 12.7 percent. The combined age group of 25-34 accounted for the greatest concentration of total bicycle sales with 55.4 percent.

Relative to population in each age group, sales indicate that there is above average interest in bicycle products in the 15-44 age categories. Sales are relatively lower, at 27.6 percent, for the younger segment (age 15-24); this is significant given the fact that the population in this segment is almost half that of the 25-49 segment.

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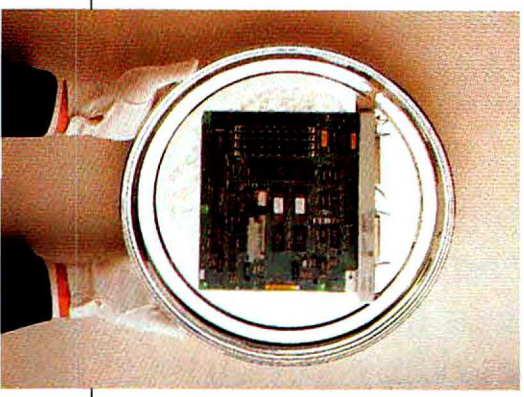


PRODUCT SURVEY

Laser Fare

by Henry Bortman

An in-depth look at Apple's three new LaserWriters: the II NT, II NTX, and II SC. Be sure to read this article before deciding which one best suits your present — and future — needs. **140**



DESKTOP PUBLISHING

A New Leaf

by Gregory Wasson

If you do high-level desktop publishing, take a look at *Interleaf,* a multiuser Macintosh II program for high-volume publishing. You get word processing, graphics, and chart generation in one package, but don't expect a familiar interface or unlimited fonts. **158**

GRAPHICS

Pick a Peck of Pixel Palettes

by Henry Bortman

PixelPaint is the first graphics program to take advantage of the full range of the Mac II's 16.7 million colors. It can be slow to open and save but well worth the wait. Go ahead. Paint the town any color you like. **172**

POWER COMPUTING

Double Helix Takes Form

by Gary Hirschberg

In this second article in a series, we look at the form-design capabilities of *Double Helix.* Our review/tutorial takes you step by step through the whole process, from template to output. **190**

Big Macro Attack

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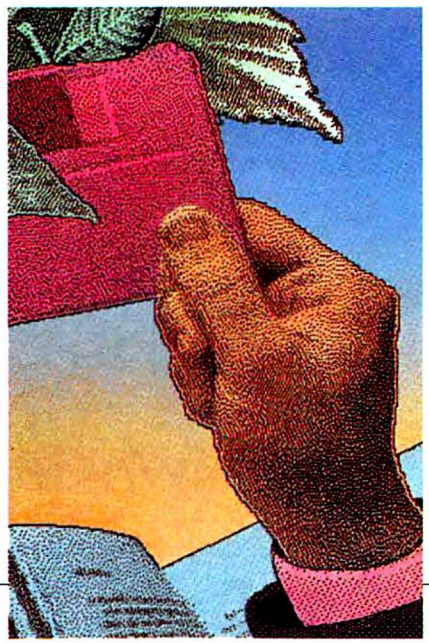
If you're a dedicated *Works* user, your life just got a little easier. *WorksPlus Command* increases that program's power and adds new capabilities. If the macros it provides aren't what you're looking for, you can easily build your own. **244**

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DAs of Our Lives

by Sharon Zardetto Aker

You want to stuff as many fonts and DAs as possible onto your Mac.



Which of the programs that let you do so is your best choice? We look at the two front-runners, *Suitcase* and *Font/DA Juggler Plus.* It's a pretty even race, but for some users, *Font/DA Juggler* may have the edge. **202**

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by Haven C. Sweet

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The Write Choice?

by Russell Ito

Microsoft's new low-end word-processing program, *Microsoft Write,* may be just what you've been looking for. On the other hand, you may be better off using the short-menu option in *Word* — or sticking with your present program. **226**

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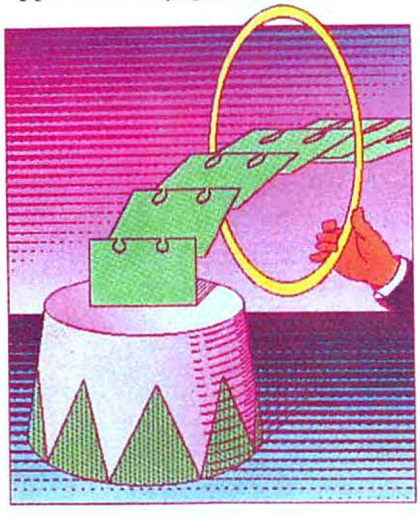
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The Help Folder is on vacation this month, as Dan Cochran is on his way to Apple's Paris offices. In coming months, the column will be handled by Chris Espinosa of Apple. Bon voyage, Dan!



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by John C. Dvorak

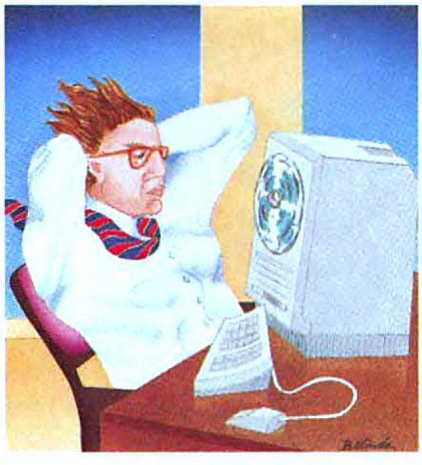
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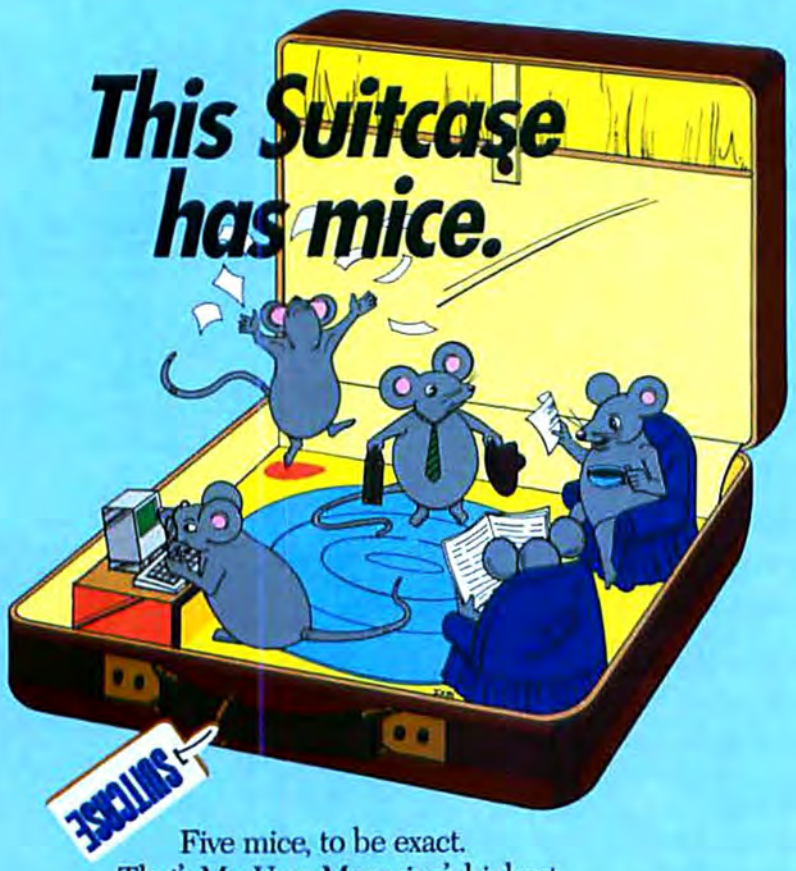
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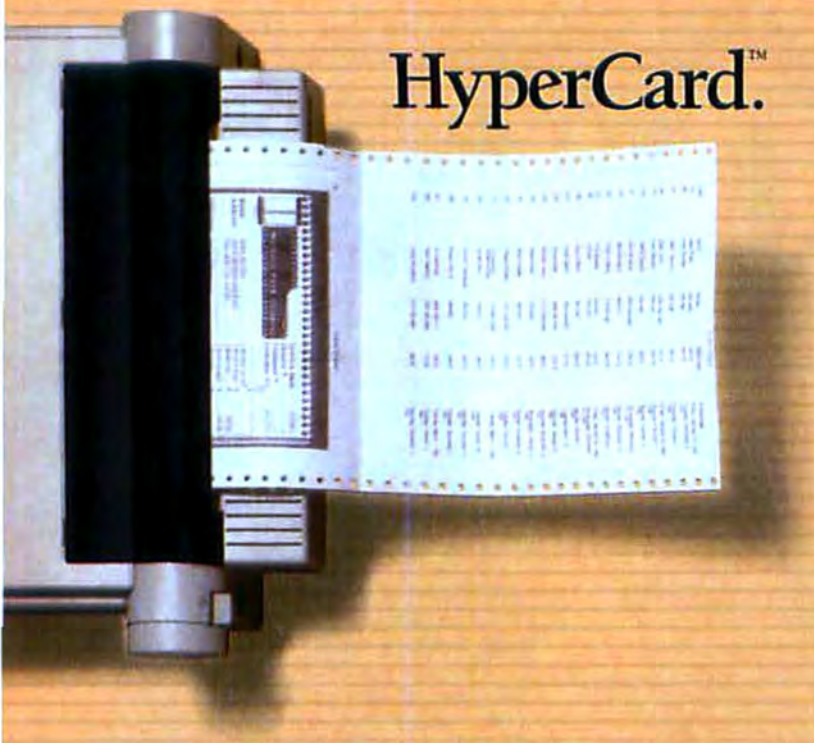
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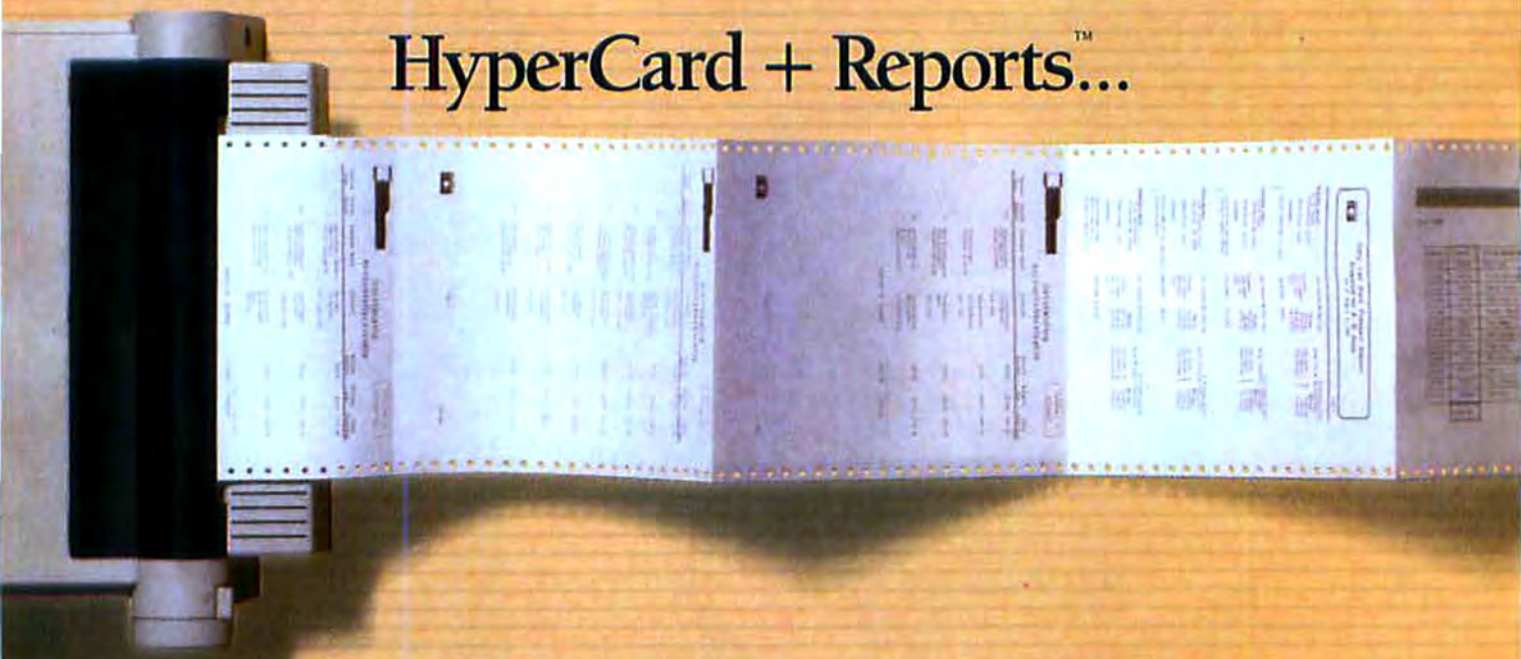
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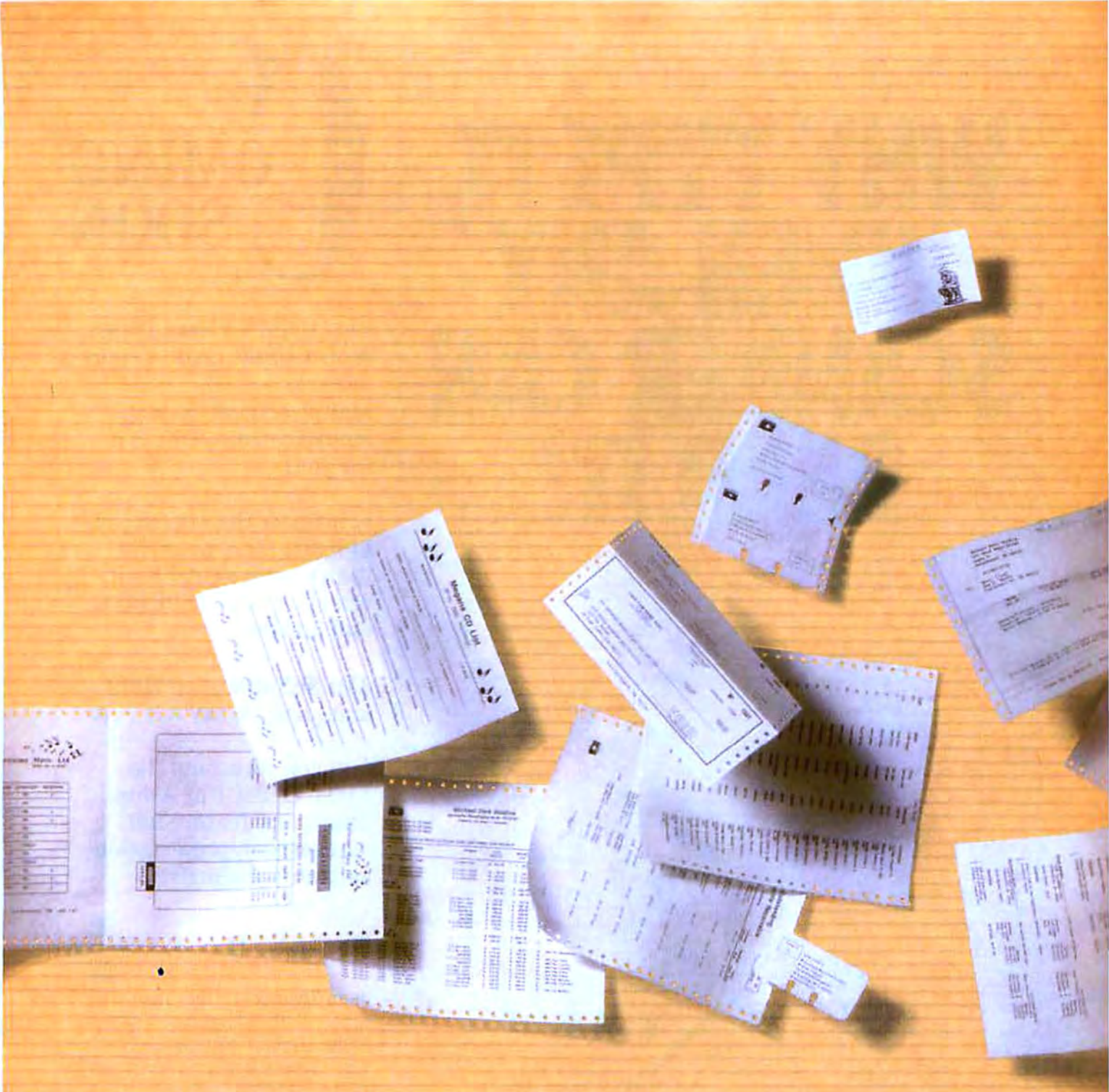
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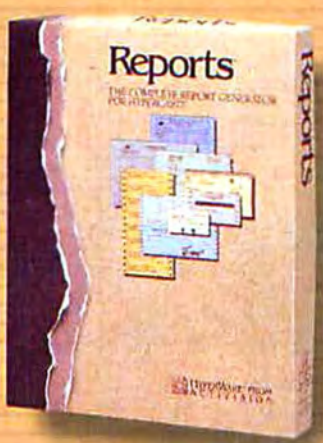
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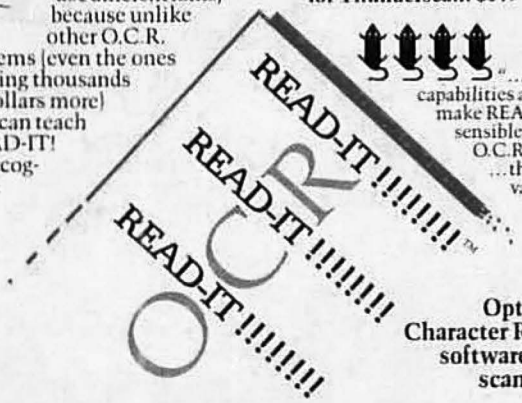


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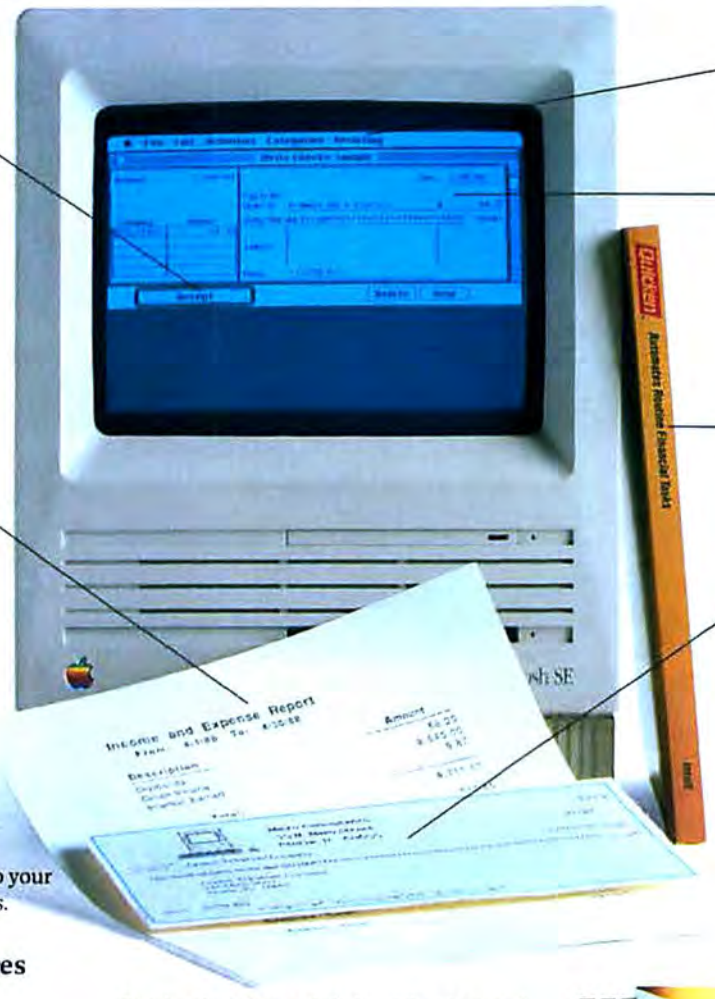
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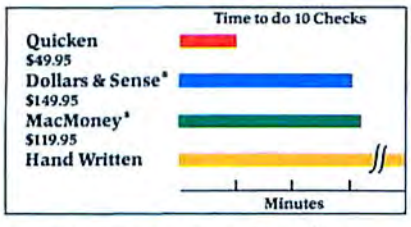
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Send in the Clones

The IBM PC has been successfully cloned by many companies. The Macintosh has not. I think it's too bad that the Mac has not been successfully cloned, but a lot of folks at Apple vehemently disagree with me about it. So far, the folks at Apple are getting their way, and you can't buy a legitimate Macintosh-compatible computer. The subject of cloning the Macintosh involves many interesting issues, however, and I'd like to share a few thoughts with you about the pros and cons of Mac clones.

First, let's take a look at other successful computer clones. By far the biggest clone business involves clones of the IBM PC series of computers. Computers that are compatible with the IBM PC, PC XT, and PC AT are available from hundreds of different vendors; some of the clones, such as the Compaq 386/20, offer better performance than IBM's own machines. Many people credit the widespread availability of these IBM-compatible clone computers with establishing IBM's technology as the leading standard in the microcomputer industry. Although IBM could have taken legal measures to try to stop PC clones, the company felt it was better to have other manufacturers selling lots of IBM-compatible computers in order to rapidly establish IBM's technology as the most widely used standard.



TOM UPTON

APPLE BEATS PINEAPPLE

Apple, on the other hand, has always taken aggressive legal measures to try to stop the cloning of Apple computers. When the Apple II first came out, many companies were quick to copy the design of the computer. Apple-compatible computers with names such as Pineapple, Banana, Orange, and Wombat were available for less than half the price of the genuine Apple II. These computers were direct rip-offs of the Apple II, right down to the programs in the computer's ROM (read-only memory). These companies were merely copying Apple's ROM programs electronically and transferring the programs to the ROMs of their clone computers. This direct copying of the ROM programs eventually led to these exact copycat computers' being pulled from the market.

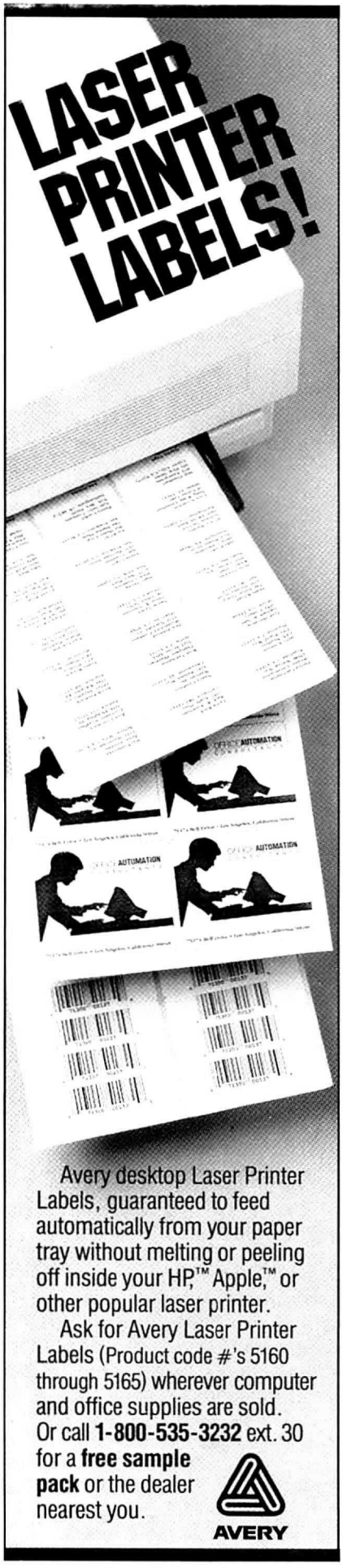
The programs in ROM are related to the operating system of the computer and are the key (along with the right computer circuitry and disk operating system) to what makes one computer compatible with another. When microcomputers were first introduced, there was some debate about whether or not copyright laws applied to the ROM programs, since these programs couldn't be directly read by people. Apple, in fighting off the directly copied ROM programs, was instrumental in establishing that copyright protection did indeed extend to programs in a computer's electronic memory. By proving that Pineapple, Wombat, and others directly violated Apple's copyright on the Apple II ROM programs, Apple was able to obtain a legal injunction against the sale of those computers in the U.S. and other countries with which we have trade agreements.

Similarly, you may have heard rumors of special ROM programs for the Atari that let you run Mac software, or Mac-compatible machines for sale in places such as Hong Kong or Brazil. These are all examples of machines with direct copies of the Mac's ROM programs, which are therefore illegal to sell in this country.

THE SAME BUT DIFFERENT

There is another approach to creating clones besides merely copying the programs in ROMs, however. A company called Language Arts managed to duplicate the functionality of the ROM programs in the Apple II without exactly copying the actual programs. Language Arts did so by reverse-engineering the features and functions of the software and figuring out how to make a different group of ROM programs do the same thing that Apple's ROM programs did. Although Apple tried to fight off the Language Arts ROM programs, its attempt was not successful, since the ROM programs were not direct copies and therefore did not violate Apple's copyrights.

Language Arts then supplied the ROMs for the Franklin computer and the successful Laser 128 computer. This strategy of duplicating ROM functionality without copying



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the actual software was also used by Compaq, Phoenix, and other companies in the IBM market to create IBM-compatible ROMs that could sell legitimately without violating IBM's copyrights. Several companies are currently hard at work on legitimate copies of the ROM programs in IBM's new PS/2 series.

As with the Apple II and IBM PC, the key to cloning the Mac is in the computer's ROM programs. The Mac's hardware can be legitimately duplicated fairly easily, because creating a functionally equivalent machine that is not an exact duplicate of the Mac is not a great engineering obstacle. The disk-operating system of the Mac (the *System* and *Finder*) comes with virtually all application-software packages, so that's also not a big problem. The question is, can any company duplicate the functionality of the Mac's ROM programs without violating Apple's copyright? I think the answer is yes.

NO, NO, NO!

At Esther Dyson's annual PC Forum this spring, I asked Jean-Louis Gassée, Apple's vice-president for research and development, what he thought about Mac clones. "No, no, no!" came his emotional reply. "We're not about to hand over the keys to our premier technology to anyone else," he continued. Well, unfortunately for Gassée, other people out there are picking the lock to the Macintosh while Apple's not watching. I've heard rumors about two separate companies that are trying to duplicate the Macintosh ROM's functionality without directly copying the software code, thereby avoiding violating Apple's copyrights.

I think it's rather brash of Apple to think there are no Macintosh clones just because Apple won't hand over the keys. More likely it's because the Macintosh ROM programs are fairly complicated and have taken longer to reverse-engineer than IBM PC or Apple II ROM programs. Apple's had enough trouble keeping up with the *System*; imagine the difficulties for an outsider.

Because the Mac SE and Mac II ROMs have about twice as much software in their 256K ROM chips than the Mac Plus has in its 128K ROM chips, the first Macintosh that companies are trying to clone is the Mac Plus. I'm sure Apple will file suit to try to prevent the Mac clones from being sold, but it wasn't successful in stopping the Laser 128 Apple II clone, and I have my doubts about whether it will be able to stop a Macintosh clone. If my sources are right, this issue may come up sometime later this year when a Macintosh clone may be introduced.

I'm sure Apple will file suit to try to prevent the Mac clones from being sold.

LICENSE TO CLONE

Regardless of whether or not any companies successfully introduce Macintosh clones, I think Apple should consider another cloning scenario. In this alternative scenario, Apple could license Macintosh clones of older models to certain manufacturers and thereby retain the rights to the Mac technology while making a license fee from the sale of every authorized Mac clone. Since Apple wants to protect its current product line, it could license only the rights to reproduce the older Mac models that it no longer wants as part of its product line family. For example, when Apple stopped producing the 128K Mac, it could have licensed that machine to another manufacturer; likewise for the Mac 512K, 512KE, and, eventually, the Plus.

This type of licensing scheme could make low-cost fully-compatible Macs available. Low-cost Macs, even if they were clones of older models, would take sales away from unlicensed Mac clones as well as from other computer lines such as the IBM-compatible and Atari computers. Licensing Mac clones would also give Apple more control over its

market and technology than IBM has, since companies such as Microsoft (which produces IBM's disk-operating system) and Phoenix Technologies (which produces compatible ROMs) — and not IBM — license most of the IBM-compatible computers.

HURT OR HELP?

Apple worries that Mac clones would hurt sales of genuine Apple hardware. I think that Mac clones would help establish the Mac as the dominant standard in microcomputing, however, by rapidly enlarging the installed base of machines. In fact, some industry analysts go as far as to say that the Macintosh is not yet a standard at all — they maintain that a true standard must have more than one supplier.

Clones can, in fact, help sales of the genuine product; just look at Big Blue. Because the large number of IBM clones helped establish IBM's technology as the market leader, IBM was able to sell a million of its new PS/2 computers in less than a year. In contrast, Apple needed about three years to sell a million Macintoshes. Now more than 10 million IBM and compatible systems have been sold, compared with only about 2 million Macs. I believe that if low-cost Mac clones had been available, Apple might have been able to establish itself as the leading standard instead of IBM; the Macintosh is, after all, the better computer.

If Apple licensed only older models, it would create a larger demand for the advanced models that constitute the current product line. The users of millions of cheap Mac 512K clones would eventually want to use software such as *HyperCard* or *Illustrator* that require a Mac Plus, SE, or II, and would upgrade their equipment to genuine Apple models that offered technology and features that were more up-to-date. Apple would also benefit by selling various peripherals for use with the clones; in case you haven't noticed, some of Apple's printers sell for more than its computers do.

The most important potential benefit of Mac clones would be the proliferation of great software, which would increase to accommodate a larger installed base of computers. Developers would have many more machines for which to sell their software, thus enjoying increased revenue and being able to reinvest more money into producing even better software. Better software is not only great for us computer users, but it is also what will keep the Macintosh ahead of the competition in the long run.



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by Steven Bobker

Macintosh Futures

Predicting the future was an honorable occupation thousands of years ago, and it's an honorable occupation today. Trying to read the future can be a valuable enterprise because it opens windows of opportunity and allows problems to be nipped before damage can be done.

Knowing what is about to happen has never been easy (nor particularly certain). And the predictor's job is much different from what it was 1000, 100, and even 10 years ago. Prediction should arise from presently known facts, combined and integrated in the predictor's brain to produce logical constructs.

The first element of successful prediction is data. But the data problem has changed radically in the last few years. It used to be a simple matter of gathering whatever data there was. Now the amount of data available to today's predictors is so overwhelming as to virtually impede the process.

No longer is it enough just to assemble the information. That might have been sufficient 20 or 30 years ago. Now predictors must frequently develop means of winnowing the relevant data from the vast amounts of raw data available.

Computers are wonderful repositories for storing data. There are applications that can search all the files on a hard disk for specific phrases. But computers can't, with any certainty, tell you which phrases to look for or which bit of data should be associated with which other bits. And computers still can't make the intuitive leaps the brain can, connecting the seemingly unrelated to reach absolutely correct conclusions.

That computers will one day be able to make those leaps I don't doubt, although I don't have enough data to predict when that day will be. Until then predictions will be the province of the human brain. Yes, the computer can calculate probabilities, helping the wonderfully fallible brain to avoid the patently impossible. And file-manipulation and searching techniques already relieve the brain of much of the cataloging overhead that used to be necessary. But prediction is still very much an art. It's what I'll be doing in the next few columns.

In that most perfect of all worlds, I could just ask the right questions and get absolutely accurate answers. So could every executive and product manager. Life would be boring. Business would become a game of allocating the resources and money to meet clear and predictable goals. Apple, for example, would know exactly how the Macintosh family would have to evolve to maximize its market share. It would know that by late 1988 a new computer with a specified set of features and with a specific suggested retail would maximize market share and profit. It could use the mathematical disciplines of linear and nonlinear programming to check that the aiming point really was optimum, that small variations wouldn't produce a superior result. And, I guess, it'd be happy.

Unfortunately, there's no real way to say where the aiming point really is. All that Apple can do is make a prediction, a prediction based on the data currently available. And it has. The next generation of Macintoshes probably already exists as a group of prototypes. More than likely, the next several generations of Macs are planned.

I've just completed an intensive study of the data available to me (and you, if you know where and how to look). Here is where I think the Mac is heading.

The market is splitting into two fairly clearly defined segments. One segment demands the most powerful, most innovative machines possible. This is the group to which the original underpowered Mac somehow appealed, and it is the group now served by the Mac II and the accelerated SEs. It consists of the people Apple as a corporation has traditionally served and served well. And Apple will continue to support these people. Although John Sculley has repeatedly said that there will be no new CPUs in 1988, I think he is playing with words.

I think that (barring a laptop) there will be boxes with new names, but the innards of some boxes will not look at all like they do today. The 68020 in the Mac II, for example, is sure to be replaced by the faster, more capable 68030. That has to happen, if for no other reason than Apple's major push into UNIX. Apple's UNIX variant, *A/UX*, requires (among many other things) a page-management memory unit (PMMU — currently the Motorola MC 68851). *A/UX* cannot make inroads



until a substantial number of installed units have PMMUs. But the 68851 is an expensive chip, and it will continue to be an expensive add-in option. If, however, a 68030 were substituted for the current 68020, all Mac II's would suddenly have PMM capability because PMMU functionality is built into the 68030. As there's already a PMMU socket on the Mac II's motherboard, a simple daughterboard, holding the 68030 and bridging the current 68020 and 68851 sockets, is very likely. And because 68030 prices are only slightly higher than 68851 prices, the change could be made without an actual price increase.

The SE can similarly be upgraded. Just as the SEs now shipping (they actually started shipping last November) have a new and much quiet-

DIDIER CREMIEUX

er fan, the SE could have a new CPU. It'd still be the same SE; it might not even be any faster (the 68030 doesn't promise huge performance increases). It'd just be a better, more capable machine.

There will probably be other new versions of both the SE and the Mac II. I wouldn't be surprised to see a headless SE — the bottom of an SE — that you could hook to the monitor of your choice. That one wouldn't support color, at least not this year. And look for a smaller Mac II, with three or four slots. The laptop, if announced this year, will have a name such as Macintosh SE Portable. You could argue that modified units such as I've described are not really new CPUs. After all, they have names such as SE Enhanced or Mac II 030. A new CPU requires not only new technology and new functionality but also a new name. Thus, these units are not new CPUs.

Computers still can't make the intuitive leaps the brain can, connecting the seemingly unrelated to reach absolutely correct conclusions.

That's this year. Next month I'll discuss the other (and probably more important in the long run) market segment — the low end. Machines that sell well in that segment have to evolve toward the ideal appliance computer, the machine you simply turn on and don't think about. That's the computer that can significantly increase the acceptance of personal computers among the vast majority of people who neither use computers nor particularly want to. These are people who demand both immediate ease-of-use and immediate and visible results. I'm sure that the best minds at Apple have given this segment of the market much thought. I'm sure they have some really interesting plans. And next month I'll tell you, based on my data gathering, what I think they are.

There's also another small but highly visible and important-out-of-proportion-to-its-size segment: the superhigh end. Apple has always had a great interest in such computers, and I see no signs that that interest is abating. Although Apple's plans in this area are closely guarded secrets, I do have some idea about what is going on, which I'll also discuss in next month's column.

ODDS AND ENDS

Recently, I've come across a disturbing number of reports of authorized Apple dealers refusing to provide the latest *System* software and *HyperCard* with new purchases. Businesslands, in particular, have been singled out for either trying to sell these products to purchasers of new machines or simply refusing to provide them. It appears, however, that a broad spectrum of dealers are guilty here.

If you buy a Macintosh (any Macintosh) from an authorized Apple dealer, that dealer *must* either provide the copy of *HyperCard* and the latest *System* software (with its documentation) or give you a coupon to send to Apple for these products. If your dealers refuse to do either of these things, you should ask them to contact Apple corporate via AppleLink (all dealers are required to subscribe). Apple will promptly remind them of their responsibilities.

If the dealer refuses to give you what you have bought and will not contact Apple, take your business elsewhere and let Apple know. Although Apple's record with its dealers is not particularly exemplary, the company will act if it receives enough complaints. Just don't get so angry that you give up on Apple and Macs. They're still the best computers your money can buy.

A bit earlier I alluded to a new fan in SEs. The old fan was a squirrel-cage motor, similar to the device inside every electric hairdryer (indeed, I've heard that the original SE fan started out life as a hairdryer motor). Whatever it was, it was noisy. In fact, most of the early complaints about SEs concerned the noise this fan made (or makes, if you are unfortunate enough to be stuck with one).

The new fan is called a muffin fan (it looks like a small window fan) and from some rather subjective testing is a bit less than half as noisy as the original. Its noise level is wholly acceptable. It's the fan that should have been in the SE from the beginning. A false sense of economy, however, dictated the nosier and cheaper unit. All current SEs should have this fan. Just to be safe, tell your dealer that you know about the quieter fan and insist the dealer guarantee that your SE has one. You (or the dealer) can look inside before you take the Mac home. (You can do this without opening the Mac — use a powerful flashlight to look inside the area above the power switch. The old fan's blades are vertical; the new blades are arranged in a circle.) Or the dealer can guarantee that an old SE will be promptly swapped for the new quieter one. Either way be sure to get the quieter SE; it's a much tamer beast, especially in a domestic setting.

If you have a noisy SE, you have several options. Unfortunately, all but one of them requires opening the case and mucking around inside. This is generally not recommended and voids your warranty.

The solution that doesn't void the warranty is (I'm sure you knew this was coming) the most expensive. It's also the best fix and not unreasonable. Apple is selling the new fan as a replacement part, to be put in by your service rep (your dealer should have a qualified service person on the premises). The price for the parts and the installation labor will vary from dealer to dealer, but it should be within a few dollars of $90. Certainly, you shouldn't pay much more without a very good reason. If your dealer looks blank when you request the new fan, refer to part number M076-0311.

Some of the other fixes involve adding a resistor or a Zener diode to the power-supply board — not a solution for average users. These solu-

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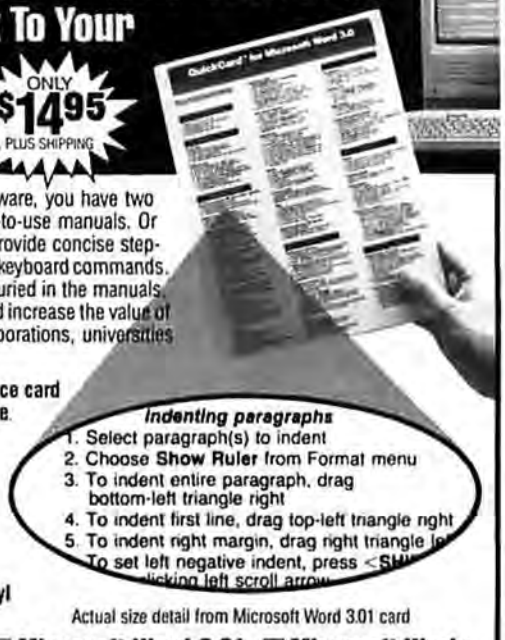
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tions slow the existing fan down permanently, and you shouldn't even consider them if you have or ever plan to have an expansion card in your SE.

Several other people are also selling replacement fans. These appear to be similar to the Apple replacement. They cost you your warranty, though.

The 68020 in the Mac II is sure to be replaced by the faster, more capable 68030. That has to happen, if for no other reason than Apple's major push into UNIX.

The final fix I've seen is the most elegant. You can easily insert a small circuit that includes a thermistor (a temperature-sensitive transistor) into the fan circuit (using three easy, nearly foolproof vampire clips). You cut one wire and mount the thermistor package near the top of the back of the power-supply board. This device then controls the fan's speed, supplying full power (and noise) in those rare cases when lots of cooling is called for and dropping the fan speed by up to about 40% most of the time. That speed reduction cuts the noise in half.

Installation is simple. The hardest part is opening the case. This neat little package is called the Quiet Cool and is offered by Peripheral Land of Fremont, California (call (415) 657-2211 for the name of the dealer nearest you). The suggested list price is $59.95. Installation, if you want your dealer to do it, is extra. As usual, installation by a dealer who is not an Apple dealer or by you voids your warranty. If, however, your dealer is an authorized Apple service center (as many if not most Peripheral Land dealers are), your warranty remains intact.

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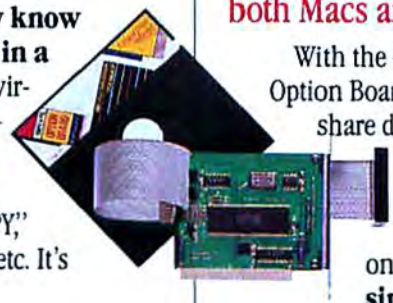
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by Neil L. Shapiro

Viral Infection

I looked at my Macintosh screen with a mixture of fear and loathing. The words on the graphic screen hardly seemed threatening. Yet, I knew that the message, for all of its seeming innocence and grace, could be the most seriously dire problem that all of us in the Macintosh Community might have to face in the coming year.

The words read:

• ***Richard Brandnow**, Publisher of MacMag, and its entire staff would like to take this opportunity to convey their **Universal Message of Peace** to all Macintosh users around the world.*

While it was hard to disagree with the message, in this case even Marshall McLuhan would have to agree that the message was *not* the medium. For this message appeared, unannounced and unwanted, on my own computer screen, carried on the slimy wings of a "computer virus."

In the name of Universal Peace, Richard Brandnow had opened a Pandora's Box of horrors and harpies that may dog us all forever.

What's a computer virus?

How did this happen?

What's wrong with this anyway?

Let me give you some background:

BITS, BYTES, HORSES, AND VIRUSES

When not working on *MacUser*-oriented tasks, I am the Chief Sysop of the MAUG group on the CompuServe network. This group meets using an online BBS system to share information and freeware software. Other groups such as ICONtact on Delphi and Coffee MUG on GEnie are structured along similar lines.

Part of my online responsibility is to run an area devoted to Apple's *HyperCard* program. In this area many hundreds of people have uploaded thousands of stacks for others to use. So, it was a shock one day when a member reported to me that there was what he called a "Trojan Program" among the new stacks. Now, a Trojan Program is a program that has been purposefully designed to be hurtful. It hides deep within itself some sort of harmful or unknown routine.

Personally, I have always thought the term "Trojan Program" to be an unacceptable misnomer. The Trojan Horse was a well-thought-out tactical ploy by the Greeks, during a declared war, to enter a city that should have been on its guard against all such ploys. The Greeks who rode within the Trojan Horse were heroes, putting their own lives on the line.

But the people who program Trojan Programs are often just pond scum. They have chosen to use an act of deceit without a war being openly declared, against an "enemy" who has no choice but to be caught off guard. It is not the Trojan Horse that such people put me in mind of, but, rather, the Day of Infamy when Japanese Zeroes screamed above Hawaii in a surprise attack following a supposedly fruitful peace negotiation.

But even a Trojan Program would have been more acceptable than what the MAUG sysops were to find when they examined and disassembled the stack. It was not *just* a Trojan Program. It was what many people now call a "computer virus."

LOST TIME, LOST HOPES

The first day following the discovery, we had three people examining the stack full time. We discovered that it would replicate a mysterious Resource into the INITs of any System it came in contact with. If you ran the stack, your System file wound up with an INIT installed. If you launched that System, it would corrupt any other System online and install the same INIT resource.

Forty people on MAUG had downloaded the stack before we discovered it. My understanding from other members was that the stack had also been downloaded from just about all the other electronic networks as well. Our staff was horror-stricken. What could the self-replicating INIT resource be capable of doing? Perhaps it was just a form of graffiti. Or maybe it would erase hard disks.

Billy Steinberg, who is a true genius at such things, was first to disassemble the INIT and figure out what it did. It seems that the INIT would replicate itself until March 2, 1988 and then display the message from Richard Brandnow. Then, on March 3, it would remove itself from your System.

I was aghast. In fact, as I write these words, I am still appalled that an otherwise reputable organization such as *MacMag* could have been a



party to this type of development effort. I decided to call Richard Brandnow at *MacMag* 's offices in Canada and ask him to be interviewed. I explained to him my connections with both *MacUser* and MAUG. I was very up front about writing a piece condemning this practice and told him that I wanted to give him a chance to reply.

We had an interview that, in many ways, reminded me of some of the lesser known works of Lewis Carroll.

CANADA UBER ALLES?

Basically, Richard sees this computer virus he has had designed as a "nifty" and "non-destructive" way of "...saying, 'Hi There!' to convey *MacMag*'s peaceful message."

I told him that my own fears centered on people adapting his routine to use for more harmful computer viruses in the future. Richard assured me that, "Macintosh people are not nasty," and that this type of fear was groundless.

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When I insisted that maybe, just maybe, a couple of less-than-nice people had managed to buy a Macintosh computer — perhaps the lifestyle-enforcement squad from Cupertino was asleep that day — he laughed and told me that I was experiencing a "cultural problem."

"Here in Canada," he said, "we don't have nuclear weapons. We are not allowed to own guns; we don't use guns. Not like in the United States, where people are nasty."

To design a program that claws its way into someone's System file, for any reason, is reprehensible.

Somehow, this did not reassure me. Richard proudly admitted that he had begun developing and spreading this computer virus in December. He denied, however, knowing anything about it being placed in a *HyperCard* stack. According to Richard, the finished virus was simply left on a Mac II and a Mac SE in the offices of *MacMag* for two days. Whoever copied software from those machines got the virus. It appears that at least one programmer figured out enough about the virus to move it into a *HyperCard* stack. But even without the *HyperCard* connection, how far did the virus spread?

Richard told me that "as the publisher of a Macintosh magazine, I get to visit many corporate offices."

Who else had the virus?

"Aldus has it on their machines," he told me. "Apple has had it on their machines. I've been at Apple many times and seen it there." He denied having actually planted the virus in those companies. "Perhaps because I am a Canadian," he said, "I don't do nasty things."

To Richard Brandnow, this computer virus was still a "nifty" way to celebrate March 2nd, the birthday of the Mac II, with a message of peace and goodwill.

I think he just should have settled for buying a card from Hallmark.

When I set up my own computer System, I do not expect that another person will tamper with it, without my permission, for any reason whatsoever. To design a program that claws its way into someone's System file, for any reason, is reprehensible.

Richard feels that everything is OK because his announcement INIT was harmless. Actually, I have to wonder if it is really harmless. Did he test it with hundreds of programs for compatibility?

In just one evening I managed to find a program that would not run with a Brandnow-infected System — *Apache Strike* from Silicon Beach Software. The documentation for that game specifically says to remove INITs from your System file. Well, you can't remove something you don't know is there. The program runs fine on my regular System. It hangs and crashes on my Brandnow System. How many other programs has this virus interfered with, how many crashes are attributable to it? We'll never know how many hundreds, perhaps thousands, of hours of frustration this has caused already.

But even if the INIT were absolutely, completely, 100% harmless, it would still not be "nifty" but anathema to everyone who understands what computing is and what it should be.

You can't justify breaking into someone's house because you wanted to leave them a message. Neither can you justify breaking into someone's computer system to do the same. Personal property, at least in the United States, is inviolable. To act otherwise is at the least ethically hollow and perhaps criminally culpable.

I hope that this action is not simply treated as a "prank" and shrugged off. It is a threat aimed at each and every one of us who own a Macintosh computer system.

We need to make one thing very clear in all of this: Our computers are our own.

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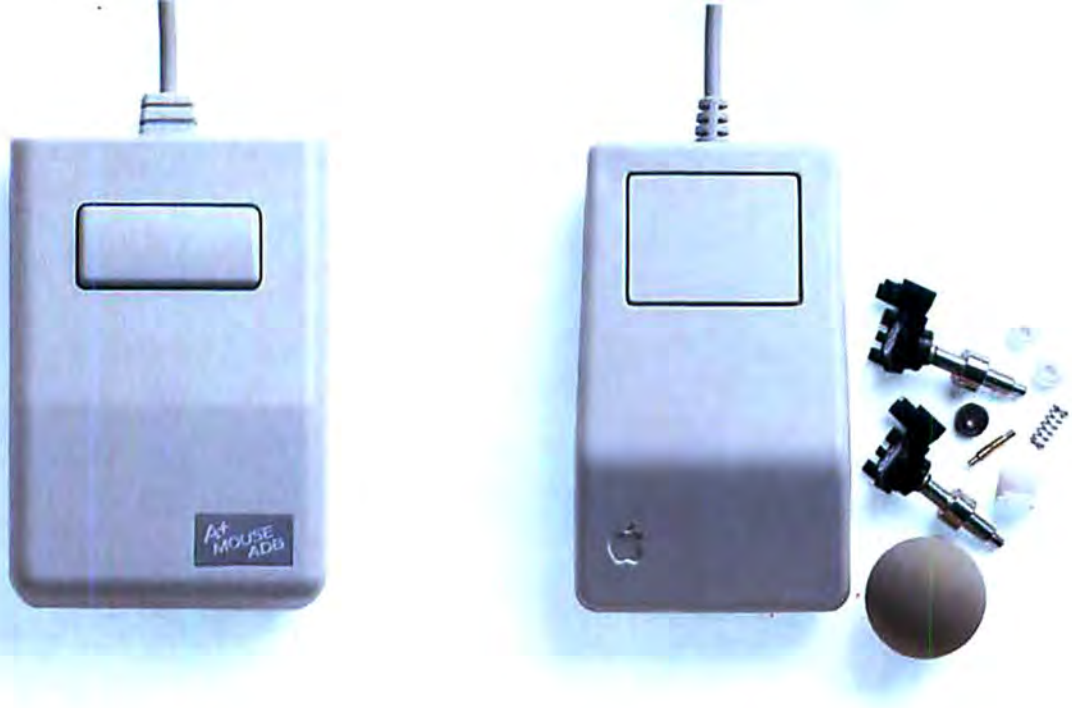
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We're always happy to hear from our readers, so keep sending your comments to Letters to the Editor, MacUser, *110 Marsh Drive, Suite 250, Foster City, CA 94404. All letters become the property of* MacUser, *and we reserve the right to edit any letters we print.*

DOOR PRIZE

Thank you, thank you for the informative article, "Open Door Policy" by Dave Valiulis (February '88) — very well-researched, well-written, and extremely useful information.

Like many of my Mac enthusiast friends, I had noticed the Easy Access icon but had no idea what it meant. None of my sources knew what it was either. I thought Apple had taken the International Symbol of Access in vain and used it to refer to something unrelated to disability. I am glad to learn I was wrong! Once again, Apple has shown its dedication to accommodating the needs of people with special abilities!

Thanks for opening a door and bridging a gap!

PETER M. ROBERTSON
ACCESS UNLIMITED
SANTA BARBARA, CA

ON AGAIN, OFF AGAIN

I use my Macintosh Plus an average of two to three hours a day in my home. I have heard that frequent on/off, of which I am often guilty, can significantly shorten the life span of my Mac. Would keeping the power on 24 hours a day using a screen saver be more healthy for the Mac?

EMILE D. BROUSSARD
METAIRIE, LA

You might extend the life of your Mac a little by leaving it on continously — but for safety reasons, you should turn it off whenever you leave it unattended. Chips can decide to blow up at the slightest provocation. — CC

TV OR NOT TV

You at *MacUser* appear to be keeping track of the TV shows that the Mac appears on. So I am writing to tell you about the latest show in which the Mac has starred. It was the week before Christmas' episode of "MacGyver" on ABC. It was, if I remember right, a Macintosh SE running *Mac-A-Mug* with an ImageWriter II attached, and even better, they actually used the thing.

I hope this will be of help to you.

LLOYD J. QUALLETTE
KENAI, AK

Noted. — JZ

II BE OR NOT II BE

Scrambling for information on what will and won't work on the Mac II is a real hassle. Apple, with obvious indifference and contempt for its customers in many ways, continues in some idealistic dream world where its dealers are a fount of information concerning its products.



Some of your advertisers clearly state that their products can be used with the Mac II. Many, including those with expensive, elaborate ads, do not provide this type of information. The absence of this guidance incurs a needless waste of time in phone calls or correspondence between the vendor and the potential buyer.

To even consider purchase of programs on the chance that they "may" work on the Mac II would be pure hypocrisy. I am grateful to those advertisers that do provide the useful and needed guidance that their products will or will not work on the Mac II.

ROY C. KING
AUSTIN, TX

In the absence of advertiser information on Mac II compatibility, we'll be providing occasional lists stating what does and doesn't work. In the March '88 issue ("New On The Menu," page 46), we published such a chart. Look forward to even more comprehensive compatibility lists. — BT

4D OR NOT 4D (4 UPI)

In the February '88 issue, Charles Meyerson wanted to know about receiving UPI transmissions. Well, I don't know if this will work for him, but *4th Dimension* lets you alter its ASCII map to suit your needs. (Or you can create your own specialized ASCII map to use for any purpose you choose, which is especially useful for importing and exporting data from other formats.) I assume the UPI ASCII format could be imported in this way, though having never actually tried this myself, I couldn't attest to this actually working. I will say this, however: It has been my experience that if *4D* says it can do something, it can! (And then some!)

J. SMITH
BEVERLY HILLS, CA

"J. Smith" — right...C'mon, Guy. We know that's you. — RI

DESPERATELY SEEKING PASCAL

I bought a Mac Plus last year in hopes of learning to program. I am 12 years old and have only some experience in programming BASIC on our old TRS-80. My brother, who learned BASIC much better than I and now writes programs to control a beam line at Bell Labs (don't ask, I don't know what that is about), forbade me to learn any more BASIC. He claims he had to "unlearn" it before he could move on. Anyway, I always use the computer to write papers, do diagrams for science, and play games, but I can't find anyone to teach me Pascal or something like that. At my school, we have "computer literacy" — Ha! We use these computers from 3 B.C. Our "teacher" replies, "We don't worry about that stuff" when asked what the clock speed of the computer is. My brother recently bought *Turbo Pascal* for his own use and then went back to college, so he can't help me.

BELINDA MORRISSEY

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The manual expects you to know about Pascal already, and school doesn't get to it until tenth grade (almost four years away). How can I learn?

GARY KAPLAN
BALA-CYNWYD, PA

A good place to start is Turbo Pascal Tutor *($69.95 from Borland), a 700-page tutorial that teaches the basics of Pascal programming. You can also get free tech support over the phone — free except for the cost of the call. If you still have trouble, try programming in Logo. It's a good language to teach you to think logically.* — BT

To even consider purchase of programs on the chance that they "may" work on the Mac II would be pure hypocrisy.

LETTER TO THE FEDITOR

On your recommendation, I purchased a copy of *Fedit Plus* ("the file and disk editor for everyone. It can do more for your disks and files than any other application") at the same time as my Mac. Well, so far, the only thing it has done for my disks is allow me to type a period or comma with the Shift key up or down. I'm pleased to have been able to do this — and I thank Dan Cochran for the instructions on how to do it — but this seems to fall short of doing more for my disks and files than any other application.

The manual gives a detailed and comprehensive explanation of disk structure, but it doesn't really tell you how to *do* anything. My impression is that there is a large body of information that you're presumed to have that I don't have.

ERNEST J. CASSIDY
CHURCH POINT, NOVA SCOTIA

I don't know about the manual, but there's a 12-year-old hacker in Pennsylvania looking for something to do. Check the Tip Sheet, which often has tips and tricks you can do with Fedit. — CC

A FULL AND HIS MONEY...

Get this.

In July I responded to an ad I got because I registered for *FullPaint* — it urged me to get in on an advance offer on *FullWrite*. Because I was very happy with *FullPaint*, I paid for *FullWrite* up front. I know that others have had problems with vaporware, so I won't moan about how I got excuses and how the president of Ann Arbor Softworks is getting free publicity by promising his product and getting tarred and feathered on the cover of *MACazine* for not delivering.

The point is, I called for a status early in December and to say that if I didn't have *FullWrite* in my hands by 1/15/88, I was going to cancel, only to be told that *it was finished* and it was being shipped at the end of the year! I had been patient; I'd only called twice to get status reports, and I hadn't yelled and threatened as I'm sure thousands had, and it was to going to pay off.

Let me tell you about today.

The end of the year came and went, as did 1/15/88, and I was trying to psych myself up for calling Ann Arbor when out of the blue, *FullWrite* came! I rip open a box that had been shipped second-day air from a town I can walk to, pull out a *heavy* manual — really getting excited now — pull out a sheet of paper that has three disks inside — oboy, oboy — catch a glimpse of "prerelease" out of the corner of my eye, don't care, pop it in the Plus, let's go, *System* disk, all right, eject program disk, swap, swap, swap, swap.

Swap.

Swap.

Swap.

Forget it, I think, as I read the manual (printed in August '87) that says that I'll need a second drive (and some other friendly stuff such as "Who knows, you might even learn something" on page 9 of the introduction and "use the Reference Guide" — you guessed it, no such

125 Stacks
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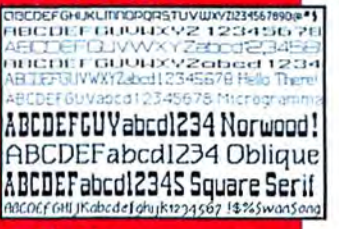
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thing), I'll load up a RAMdisk with the basics of the enclosed *System* disk. GET INFO says I'll need about 455K, no biggie — everything but *HyperCard* can run with 569K, right?

FullWrite requires at least 1024K.

Thank you for your patience and continued support. Thank you for your patience and continued support. Thank you for your patience and continued support.

Along with shipping prerelease versions after swearing that it never would, the best joke is the bit where the company says that it's a "stable pre-release version" and goes on to say that it's so unsure that it's stable that it asks that users write, rather than phone, as if the company expects bugs up the...bugs.

Meanwhile, *FullPaint* is still Version 1.0, and I generally use *SuperPaint* from Silicon Beach, a company that gives a damn. This was written on *MacWrite* 4.5, a piece of software that should be in the Software Hall of Fame for really being the "Total Word Processor" and for "Changing Serious Writing Forever."

Sorry about the diatribe. And another thing — about the editorial reply to Charles Meyerson's letter (February '88) — I thought the S in ASCII stood for standard, so how can something be nonstandard ASCII?

BART ZANTZINGER
NEWTOWN SQUARE, PA

Nonstandard standards are in the fine tradition of such oxymorons as military intelligence, airline food, express bus, almost pregnant, and stable prerelease software. — JZ

On February 10, Ashton-Tate announced the acquisition of Ann Arbor Softworks. At that time it also announced a ship date of April 30 for FullWrite. *This should mean that* FullWrite *will be on the shelves by the time this issue hits the streets.*— LK

RIGHT TIP, WRONG PROGRAM

In the March '88 "Tip Sheet" (page 103), under *MultiFinder,* reader Frank Benjamin notes that, "If you don't want to scroll to the bottom of the Apple menu to see what applications have been launched, hold down the Option key while selecting the menu. The DAs are not listed, and you have easy access to the applications list."

Like many of my Mac enthusiast friends, I had noticed the Easy Access icon but had no idea what it meant.

Your readers who are not using our product *Suitcase* may become frustrated in attempting to use this feature; it is provided by *Suitcase,* not by *MultiFinder.*

STEVE BRECHER
SOFTWARE SUPPLY

DRIVING TEST

Our aging 400K drive has resided in Macintosh #40607Z since we purchased this more or less original machine. We upgraded the 128K a while back. We added an external drive and decided to upgrade the internal drive to 800K. "Easy," smiled the salesman. "Within a week," guaranteed the service manager.

It did take a week. It took a week to put the drive that helped write this through a MacDrive Test. It failed the test, and you can't upgrade a failure. "It's Apple policy, not ours," intoned the dealer.

This old drive came home. At home it worked. Like its owners, it takes a few minutes to spring into action. Was it tested fairly? We requested a retest.

Back to the service center we trooped. Breathlessly we watched our Macintosh writhe through its MacDrive Test. It passed! The service manager agreed: Our 400K drive officially worked. "Within a week," he repeated the timing for our upgrade.

He did not call us. On the eighth day, we phoned him and learned that old 400K had failed again. A second, secret, test? We never learned what happened. Instead we learned that an added $180 would correct the problem. Only after that would we be allowed to purchase an upgrade.

As our confidence in the Macintosh sales and service system plummeted, we rescued old 400K housed in old case #40607Z a second time. Here it is, assisting in this letter, defeating its own demise. Are all old users being put through a new MacTest? The mouse is beginning to smell like a rat.

CYNTHIA H. MERMAN
ST. LOUIS, MO

BRUSSELS TOUT

Word 3.0 admittedly has some bugs and the output to printer can be tricky; however, I still decided to use the program for a 600-page book on Danish stamps that contained quite heavy formatting. During the whole output process, I had to repaginate one section of 20 pages, but apart from that I had no problems with the program. As this particular book is upgraded every three to four years, it was important to select what I thought would be a future-proof piece of software. I did not want to retype or reformat the whole book just because I was tempted to use a flashy word processor with a noncompatible file format or a word processor from a company that went out of business or decided to discontinue its product. So even if the original program was flawed, I am still satisfied that I made the right choice; it gets the job done.

Perhaps the time has come to separate software into business- and personally oriented programs. With all the power now available on the Macintosh, much new software is bound to be much too powerful for personal use.

ERIK PAASKESEN
BRUSSELS, BELGIUM

IT MUST BE TUESDAY

American firms hardly seem to realize that there's still another market across the Atlantic Ocean. Magazine ads from hardware producers almost never tell if their prod-

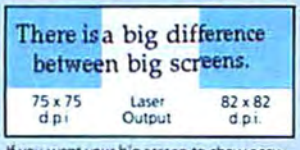
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The best joke is the bit where it says that it's a "stable pre-release version."

ucts offer 220 volts. And they don't tell how much it will cost to ship to Europe. Some of them have a European distributor, but then the price is usually doubled. So I prefer to deal with an American company, despite the high shipping charges.

Programs Plus, for example, has a minimum $35 charge for shipping, so a $20 program costs me $55. When it arrives, I must pay 19 percent product tax on this total. On top of this, I pay 4.9 percent income tax and another $5 (more or less, but more than less) for handling the package. This makes my original $20 program now around $74. (And I don't know why Americans complain about the Mac being expensive. A Mac Plus here costs around $4000 these days.)

MOORTGAT PAUL
NIEUWKERKEN, BELGIUM

OMNISCIENCE

Having been acquainted with the Macintosh world for only eight months, I must confess that I'm not sure what "Mac-like" means. In fact, I will admit that in my ignorance I had been using *Omnis 3 Plus* for several months before finding out that it is less Mac-like. I shudder to think what it could be more like — not the unmentionable, I hope.

Ms. Harrington's several articles on databases have set me straight. Came to find out, I wasn't even using a real relational DBMS at all . . . it was more of a network!? Isn't that special? In retrospect, I should have been suspicious of a mix of Europeans and Californians — that can't be very Mac-like.

I am excited about trying a real relational DBMS that is more Mac-like. I think the new graphics capability will make an excellent background for the spinning beach

ball. Best of all, perhaps, will be my lack of embarrassment if someone is looking over my shoulder at the spinning beach ball — I can proudly relate, "Doesn't that look Mac-like? This program was partially developed at Apple."

In addition, I don't have to worry about arcane programming code anymore. Well, maybe a little, as I tried programming a *HyperCard* button the other day — sure looked and felt like a sequence to me — couldn't have been arcane code, though, as it had an Apple logo on the disk. I read once that the unmentionables need an arcane code to boot a program. Do you remember whether the review was in the power-computing section or under filing cookie recipes?

Anyway, I'll give up the power and speed I have become accustomed to for a more idiot-proof code that is slo-o-o Mac-like. For a while, though, until I get the bugs out of the new system, I have plans to hide one of my SEs and *Omnis* in a closet (hope that noisy fan isn't a giveaway). Then, while my employees are watching spinning beach balls and pictures, I will be able to sneak in and get some transactions done.

THOMAS M. TYSSE
GRAND RAPIDS, MI

FAN CLUB

Regarding the recent announcement that Apple has now released a quiet Macintosh SE but will charge present owners $90 to fix their fans, I hope you will publish this open letter to John Sculley on behalf of all SE owners.

Dear Mr. Sculley:

I love my Mac SE. If my house burned down, I'd get my family out and then save my Mac. But its fan is driving me crazy.

In search of some relief, I recently turned off my noisy computer and returned to that other (but always quiet) tool for the mind — the book. I've found *Odyssey: Pepsi to Apple* to be real food for thought, especially some of these thoughts:

"Quality without compromise is expected in every function and every department. . . . That's one of the reasons why so many American companies fell into trouble. They measure quality in terms of what was affordable, meaning what level of predictable error was acceptable, rather than insisting upon perfection at the start."

"Every Mac owner could feel he had a vote in Apple's future, its direction, and its vision for the workplace of the future."

"When I trust others, I build a relationship with them. In return, I expect them to be trustworthy back."

"We had to make it acceptable to talk about accountability with the same reverence as we talk about creativity."

Are these quotes from the same person who now wants to charge me $90 to fix his shoddy product? My SE in its current rattletrap state most certainly does not "establish and maintain an operating environment conducive to human growth and development" (which you quote as one of Apple's founding goals).

Apple really should recall all the original SEs and fix them free of charge. If that doesn't wash, why not offer SE owners a rebate on purchase or upgrade of Claris' new software, equal to the cost of fixing their fans?

ROZ AULT
WINCHESTER, MA

BUZZWORDS R US

In the past year, almost all our typesetting needs have been satisfied by desktop publishing. Because there is a quality difference between desktop publishing and typesetting, customers must be informed that materials will not be typeset.

For several months, we used *desktop publish* as an adjective, even in contracts (for example, all desktop-published materials will be camera-ready). I finally grew tired of the phrase and coined a new term, *depset*. Sometimes we typeset, sometimes we depset. Clients like the word. Do you want to spread it around? No royalty will be charged.

DOUGLAS J. PAUL
CORALVILLE, IA

Sounds like a home permanent to me. — RI



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EDITED BY
LOUISE KOHL
AND
JON ZILBER





VideoCards **(top), and** ***LaserCards*** **(bottom) coordinate videodisc sequences with text and database functions on the Mac.**

Pixels at an Exhibition

Next to watching bowling on TV, there's nothing more boring than watching a filmstrip ("Thomas Jefferson's home in Virginia is called Monticello, 'the little mountain.' BEEP"). But new, interactive video products from Optical Data and The Voyager Company just might bury those deadly filmstrips forever.

VideoCards, from Optical Data, and *LaserCards*, from Voyager, are *HyperCard* videodisc controllers that can turn a videodisc into an enormous visual database. Using a Mac, you can directly access any frame or sequence on a videodisc, mark and arrange images to create your own demonstration, and perform rapid searches for related images and topics. For technical reasons, both lines of stackware are designed for use with the Pioneer 4200 or 6000 series "industrial type" videodisc players, with RS-232 interfaces.

For art lovers, Voyager has released *The National Gallery of Art Laserguide*, a *HyperCard* stack to guide you through the companion *National Gallery of Art* videodisc. The disc features the complete archive of the painting and sculpture collections at the National Gallery in Washington, D.C., and the *Laserguide* makes it possible for you to enjoy and design your own tour without leaving home. A similar guide to the work of van Gogh, *The Vincent van Gogh Laserguide*, has also been announced.

Voyager has also issued *The Voyager Videostack*, a tool kit for anyone interested in developing simple *HyperCard* videodisc controllers. The *Videostack* lets the developer create customized buttons for videodisc functions, define events (such as selecting specific sequences and audio tracks) while automatically making buttons to activate them, and build a slide tray for loading still frames and their descriptions for manual or automatic playback. It also automatically installs video drivers into any *HyperCard* stack.

Science courses at all levels will benefit from this technology, since both companies are producing stacks for science-related videodiscs. Voyager's *Bio Sci Laserguide* is a complete index to *The Bio Sci Videodisc*, which it distributes.

Optical Data's *VideoCards* are designed for use with the company's Life, Earth, and Physical Science videodiscs, and make it possible for teachers — or their students — to chart their own paths into the sciences.

VideoCards purchasers can also join the Hypermedia Development Project, a user network intended as a shareware system for the exchange of stacks and ideas. Participants receive both hardcopy and software updates on a quarterly basis, and are kept posted on other current projects. As *LaserCards* add-ons become available, the Hypermedia Development Project will serve as a low-cost means of disseminating the information.

Videodiscs, players, interface cables, and stackware are all available from both companies. Optical Data's address is PO Box 97, Florham Park, NJ 07932; (800) 524-2481, and Voyager can be contacted at 2139 Manning Avenue, Los Angeles, CA 90025; (800) 446-2001, or in CA, (800) 443-2001.

— Russell Ito

Larger Than Life

MacAmerica is introducing a new service at a bargain price: Jumbo Poster enlargements (18 inches X 24 inches) from 8½-inch X 11-inch laser printer or ImageWriter output (or anything else, like photos or line art) for a mere one dollar (plus shipping). Output from disk is also available at an additional charge. The enlargements are stunning, often with better contrast and blacker blacks than the originals. A variety of specialty papers (transparency, vellum, glossy, heavy stock, fluorescent, sticky-back, etc.) are also available. Next time you feel like blowing something up, contact MacAmerica, 18032-C Lemon Drive, Yorba Linda, CA 92686; (714) 779-2922.

— Jon Zilber

Mac Your Own Kind of Music

While Apple was busy unveiling its MIDI interface at Macworld Expo in San Francisco, most music software publishers were 600 miles away, at the NAMM (National Association of Music Merchants) show in L.A., where Apple was an exhibitor for the first time.

Meanwhile, back at the Expo, a Music on the Mac seminar featured composer Christopher Yavelow demonstrating *Cybernetic Composer*, a soon-to-be-released shareware program from Ray Kurzweil. This computer-assisted composition program is intriguing from a theoretical point of view,

but it won't put composers out of work. (Check your local bulletin board or users' group for this one.) Yavelow also demonstrated *Ovaltune* — sort of like *Music Mouse* with video — from Opcode Systems, which should be available by the time you read this (also available in a color Mac II version called *Strawberry Ovaltune*). Contact Opcode at 444 Ramona, Palo Alto, CA 94301; (415) 321-8977. Yavelow is the director of the newly formed Macintosh Entertainment Guild of America, an organization geared towards Mac professionals in audio/video fields (write to MEGA at 1032 N. Sycamore Ave., Hollywood, CA 90038 or call (213) 653-0240 for more information).

The musical show-stopper at Macworld was a beta version of *Finale*, an integrated sequencer and notation package that includes rudimentary artificial intelligence features such as the ability to automatically follow changes in tempo (a hold, a rubato passage or just plain human imperfection); *Finale* displays what you meant to play instead of producing an unreadable garble showing the exact, imperfect rhythms you actually played.

Sequences in *Finale* appear instantly on the screen in standard music notation, eliminating the need to convert sequenced files to notation files. For more information, contact Coda at 1401 E. 79th Street, Minneapolis, MN 55425, or call (800) 843-1337.

— Jon Zilber



Finale, a new MIDI sequencer, keeps tempo with you — even if you don't got rhythm. _Finale_ could be the first WYSIWYMTP — What you see is what you meant to play — sequencer.



Only in Your Dreams

Dreams, due out in July from the makers of *MacDraft*, takes up where that earlier Mac drawing program left off. In addition to color, the object-oriented *Dreams* integrates symbol libraries, 3-D perspective, and PostScript output.

Dreams, is aimed at high-end drafting and CAD markets. It does such visual somersaults as editing color patterns using tools like Finger Painting and a Paint Bucket to mix colors. An array of palettes includes tools for drafting as well as most of *MacDraft*'s accessories. Optional library disks include architectural symbols for residential and light commercial use. Future library releases will be in the electrical and mechanical engineering fields.

Is *Dreams* the answer to designers' fond wishes for CAD software or an unfulfilled desire? To find out, contact Innovative Data Design at 2280 Bates Avenue, Suite A, Concord, CA 94520; (415) 680-6818. *Dreams*' $500 price tag is being knocked down to $200 for registered *MacDraft* owners.

— Ben Templin

The Big Picture

As the ad says, "Kodak makes your pictures count" — and now that includes the picture on your Mac screen. The Datashow HR projection "pad" lets you project Mac output to any convenient wall or screen via an overhead projector. At the heart of the Datashow is a translucent 512 X 342-element liquid crystal display (LCD) that mimics the Mac SE or Plus screen pixel for pixel.

Unlike other blue, yellow, or green LCD projection devices, the Datashow HR uses crisp black LCDs with a 20-to-1 contrast ratio (the HR stands for high resolution).

The unit also features an internal fan to keep things cool when you leave the pad on a hot projector all day (since heat can affect the LCD unit), shock-absorber feet to keep the pad steady, and a switch to invert the display to a negative image of what's on the Mac screen.

The Datashow lists for $1495 and requires a $99 video adapter card. To find out more, call (800) 445-6325, ext. 883 or write to Eastman Kodak Co., Dept. 412-L, 343 State Street, Rochester, NY 14650.

— Jon Zilber

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NEWS LINE!

A Full Plate

PALO ALTO — **Ashton-Tate** has acquired **Ann Arbor Softworks**, adding yet another installment to the continuing saga of *FullWrite Professional*, the high-end word processor — plagued with one of the longest — and most public gestation periods in the history of Mac software. At press-time, Ashton-Tate had scheduled release for April 30th and will honor Ann Arbor's pre-release sales provisions.

Megabytes on a Silver Platter

SEATTLE — **Apple**'s long-awaited CD-ROM player (the AppleCD SC) was announced at **Microsoft's Third International Conference on CD ROM** in March, with a May ship date expected. The good news: The price ($1199) is less than expected and includes playback circuitry for conventional audio CDs. The bad news: Driver software for the "High Sierra" standard for CD-ROM won't be available until later this summer. Among the first disks due out. CD-ROM versions of *The Whole Earth Catalog, The Grolier Electronic Encyclopedia*, and *Books In Print*.

The Odd Couple

DALLAS — **Apple**'s implementation of UNIX — *A/UX* — was introduced at **UniForum** in February. The combination of user-seductive Macs with the user-hostile and often Byzantine UNIX environment is one of the oddest couples since Oscar and Felix, but the two complement each other surprisingly well. *A/UX* requires a hardware platform — an 80-megabyte hard disk and a souped-up Mac II — that seems expensive in traditional Mac markets, but it's a low-cost solution compared with the traditional mainframes and minicomputers UNIX traditionally runs on. *A/UX* has attracted leading UNIX database developers — such as **Ingres, Oracle,** and **Informix** — as well as Mac developers porting applications from the native Mac enviroment, like *StatView II* from **Abacus Concepts.**

The Honeymooners

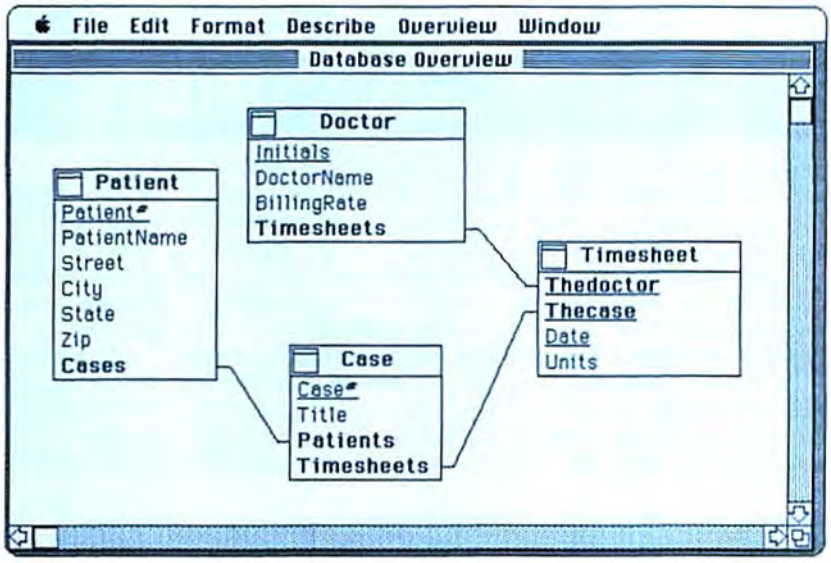
NEW YORK — The **Apple** booth and John Sculley's keynote were the hit of the recent **DEXPO** show in February, despite the fact that Apple's technology agreement with **Digital Equipment** hasn't yet yielded any products. Standards and compatibility issues (like DEC's support for, and Apple's rejection of, **Adobe**'s Display PostScript) are keeping the Mac-DEC marriage a less than perfect union. But connectivity products are already springing up as Macs begin swarming into VAX networks. **SynOptics** and **Kinetics**, for example, are jointly marketing an SE board-based network that turns regular "twisted pair" telephone wire into Ethernet cabling.

Thin Bits . . . **Texas Instruments** has announced a LISP coprocessor board set for the Mac II for developing expert systems. TI will market Mac IIs with its microExplorer board starting at $14,995. . . . Enhanced Apple IIe's and Apple IIGS's can now be mixed with Macs in version 2.0 of *AppleShare File Server* . . . **Apple** has purchased **Network Innovations**, a Cupertino software firm that develops mainframe communications software.

Reflex Plus can show you more about relationships than Dr. Ruth

The relationships between different pieces of data within your database are all important ones. Because Reflex Plus is truly *relational*, it can "relate" and cross-reference your data.

Many "database managers" are not much more than "list managers"—simple lists that can't connect and cross connect one item with another. So while they can "list," they can't really "manage."



You simply draw connecting lines to relate one item to another.

What your data tells you depends on how you look at it

It's easy to customize your output with Reflex Plus. Whatever you're working on—letters, invoices, quotations or data entry screens—Reflex Plus lets you add graphics, position them wherever you want, change sizes, change fonts and produce truly professional results. Reflex Plus lets you make the most of your Macintosh.

Some of the power pluses of Reflex Plus

- Visual database design—a "natural" for your Macintosh
- WYSIWYG ("What-you-see-is-what-you-get")
- Truly relational database manager
- Auto-Save—which means you'll never lose data again
- Paste Choice command that saves you enormous amounts of time
- Context-sensitive online Help
- Automatic creation of formulas to let you instantly search, sort, calculate, qualify and more
- Multiple entry forms for the same database
- Entry for more than one database in a single entry form
- Shows one record at a time or all records at once
- Calculated fields in entry forms
- Display-only fields
- Default, but editable fields
- GROUPBY function
- Record sizes can be 1000, 2000, or 4000 characters
- Compatible with all Macintoshes with at least 512K RAM including Macintosh SE and II
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> "Borland's new relational database, Reflex Plus, is the best Macintosh database . . . It is simple to use and operate, very flexible in design, low cost (only $279 compared to $500 for dBase Mac), and small in size (250K versus 730K for Fourth Dimension) . . . We converted an Omnis 3 database that took two weeks to design into Reflex Plus in two days . . . We think Borland is right on target with their approach.
>
> *David Smith, MacTutor*

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— Laura Johnson

UPDATES

Programs, like wine, often improve with age. To get the most out of your programs, you should be using the most recent versions. Here's a list of the current version numbers (as of press time) of many popular programs. The version number of a program can usually be found by running the program and checking the ABOUT... item at the top of the Apple menu.

Apple *System* software is special. Generally, and unless you have a 128K Mac, you should be running the latest System software. (128K owners should continue to use *System* 2.0 and *Finder* 4.1.) The latest Apple *System* software is available free from most user groups, national on-line services and local BBSs. The deluxe version (four disks, boxed and well-documented) can be purchased through Apple dealers for $49.95, not a bad deal considering what's included: *Finder* 6.0, *System* 4.2 or 4.3 and the long-awaited *MultiFinder* 1.0. As information on *MultiFinder* compatibility becomes available, we'll keep you informed.

All programs listed here are HFS compatible. The meanings of the codes in the right column are as follows: CP or NCP, copy protected or not; //, programs we have found to be Mac II compatible (not yet a comprehensive list); and S, shareware (try before you buy software). Changes and new listings are shown in **bold.** Compatibility is sometimes in the mind of the beholder. Programs listed as Mac II compatible may not perform 100 percent of the functions they offer on other Macs, nor do they necessarily take full advantage of the Mac II.

A.A.I.S. Prolog	M1.15	NCP
Acta	2.0	NCP//
AMS General Ledger	2.08	NCP
AppleShare	1.1	NCP
Aztec C	3.4b	NCP//
Back to Basics	1.03	NCP
Balance of Power	1.03	CP
Bulk Mailer	3.0	NCP//
Business Filevision	1.1	NCP
CalendarMaker	3.0	NCP//
Chart	1.0	CP
Chooser	3.2	NCP
ClickArt Effects	1.01	NCP//
Clipper	1.01	NCP
Cognate	1.5	NCP//
ColorChart	1.3	NCP
Colorizer	1.1	NCP//
ColorMate	2.1	NCP
ColorPrint	2.03	NCP
Comic Strip Factory	1.6	NCP//
Comic Works	1.0	NCP//
ConcertWare+	4.0	NCP//
ConcertWare+ MIDI	4.0	NCP//
Copy II Mac	7.1	NCP
Copy II HD	7.1	NCP
Cricket Draw	1.1	NCP//
Cricket Graph	1.2	NCP
Curator	1.04	NCP//
Deluxe Music Construction Set	2.0	CP
DesignScope	1.14	NCP//
Disk Express	1.10	NCP
Disk First Aid	1.0.1	NCP
DiskFit	1.4	NCP//
DiskInfo	1.45	NCP,S
Disk Ranger	3.1	NCP
DiskTop	3.0.2	NCP//
Dollars & $ense	4.0	NCP//
Double Helix II	r40	NCP//
Draw it again, Sam...	2.0	NCP//
Easy3D	1.01	NCP
Edit	2.1	NCP
Excel	1.06	NCP//
ExperCommon Lisp	2.2	NCP
ExperLisp	1.5	NCP//
ExperLogo	1.1	NCP
EZ Draft	2.0	NCP//
FastBack	1.02	NCP//
File	1.05	NCP
Filemaker Plus	2.1	NCP//
Finder (MFS-128K)	4.1	NCP
Finder (HFS)	6.0	NCP
Findswell	1.0b	NCP//
FlashBack	1.6	NCP
Flight Simulator	1.0	CP
Fokker Triplane	1.0	CP
FONTastic Plus	1.4	NCP, //
Font/DA Mover	3.6	NCP
Fontographer	2.3	CP
Forecast	2.0	NCP//
Frame Mac	1.1	NCP//
FreeTerm	2.0	NCP//
FullPaint	1.0	NCP
Gato	1.42	CP
Glue	1.04	NCP
GraphicWorks	1.13	NCP
Hard Disk 20	1.1	NCP
Hard Disk Utility	2.0	NCP
HD Backup	1.0	NCP//
HD SC Setup	1.5	NCP//
HFS Backup	2.01	NCP
HFS Locator Plus	2.0	NCP
Illustrator	1.0	CP/NCP, //
ImageWriter	2.6	NCP
ImageWriter, AppleTalk	2.6	NCP
InBox	2.0	NCP
Insight GL	2.0	NCP//
inTalk	3.0	CP
Jam Session	1.1	CP//
Jazz	1A	CP
JustText	1.1	NCP
Laser Author	1.3	NCP//
Laser Prep	5.1	NCP
LaserShare	1.0	NCP
LaserSpeed	1.5	NCP//
LaserStatus	2.0	NCP
LaserWriter	5.1	NCP
Layout	1.3	NCP,S
Legal Billing	1.72	NCP//
Legal Billing II	2.39	NCP//
Lightspeed C	2.01	NCP
Lightspeed Pascal	1.0	NCP
Listen 2.0	2.1	CP//
Lode Runner	1.0	CP
Lookup	1.0c	NCP//
Mac3D	2.1	NCP//
MacASM	1.2	NCP
MacBillboard	4.01	NCP,S
Mac C	5.0	NCP//
MacCalc	1.2	NCP
Mac Disk Catalog II	2.1C	NCP
MacDraw II	1.0	NCP//
MacDraft	1.2b	NCP//
MacFlow	1.02	NCP
MacFortran (all)	2.3	NCP//
MacGolf	2.0	CP
MacInTalk	1.1	NCP
MacLabeler	2.2	CP
MacMoney	3.01	NCP//
MacMovies	1.02	NCP
MacNosy V2	2.8	NCP
MacPaint	2.0	NCP//
MacPalette	1.0	CP
MacPascal	2.1	CP
MacProject II	1.0	NCP//
MacProof	3.0	NCP
MacSafe	1.08	NCP//
MacScheme+ Toolsmith	1.51	NCP//
MacServe	2.3	CP//
MacSpec	1.3	CP
MacSpin	1.1	CP
MacSpool	2.1	NCP
MacTerminal	2.2	NCP
MacTools (MFS/HFS)	7.1	NCP
MacWrite	5.0	NCP//
Mac Zap	5.0	NCP//
MailManager	1.0	CP
MapMaker	2.0	NCP
MDA	2.0	NCP//
MDS	2.0	NCP
Measure Test	12.7	CP,S//
MenuFonts 2	2.0	NCP//
Megamax C	3.0	NCP
MicroPhone	1.1	NCP//
Micro Planner Plus	5.8b	NCP
MindWrite	1.1	NCP//
miniWriter	1.4	NCP,S
MockPackage+	4.3.4	NCP,S
MORE	1.1C	NCP//
MPW	2.0b	NCP
MS BASIC	3.0	NCP
MS BASIC Compiler	3.0	NCP
MS Fortran	2.2	NCP
MS Works	1.1	NCP//
Multiplan	1.1	NCP//
MusicWorks	1.1	CP
myDiskLabeler	2.11	NCP//
Neon	2.0	NCP
Omnis III Plus	3.26	CP//
OverVUE	2.1e	NCP//
PackIt III	1.3	NCP,S
PageMaker	2.0a	NCP
Parameter Manager	1.092	NCP
Performer	2.2	CP
PictureBase	1.2	NCP
Plains and Simple	4.1	NCP//
PLP	2.0	NCP//
PowerStation	1.1	NCP
Professional Composer	2.1	CP
Profit Stalker II	1.3	NCP
Project Billing	3.0	NCP//
QUED/M	2.04	NCP
QuickKeys	1.1	NCP//
Rags to Riches	3.0	CP//
Ragtime	1.1	CP//
Read-It!	1.1	NCP//
Ready, Set, Go!	4.0	NCP//
Record Holder	2.1	NCP
REdit	1.2	NCP
Red Ryder	10.3	NCP
Reflex Plus	1.01	NCP//
ResEdit	1.1b7	NCP//
Sargon III	1.0	CP
Scoop	1.01	NCP//
SideKick	2.0	NCP
Silicon Press	1.1	NCP
Slide Show Magician	1.3	CP
Smartcom II	3.0A	NCP//
SmartScrap & The Clipper	1.03	NCP//
SoundCap	4.4	CP
Space Edit	2.0	CP//
SpellNow	1.0	NCP
Spellswell	2.0f	NCP//
StatView 512+	1.1	NCP
StatWorks	1.2	NCP//
Stella	1.3	CP//
Straight Talk	2.08	NCP//
Studio Session	1.4	CP
SuperGlue	1.03	NCP//
SuperPaint	1.00	NCP//
Switcher	5.1	NCP
System (MFS-128K)	2.0	NCP
System (HFS)	4.3	NCP
Telescape Pro VT 100	1.3	NCP
Tempo	1.2	NCP
Textures	1/01	NCP//
ThinkTank 512	1.3	NCP
Thunder!	1.0.1	NCP
Thunderscan	4.0	NCP
TML Pascal	2.01	NCP
TMON	2.8	NCP
Top Desk	3.0	CP
TOPS	2.0	NCP//
Trapeze	2.0a	NCP//
Turbo Maccountant	2.0	NCP//
Turbo Pascal	1.1	NCP//
VersaTerm	3.0	NCP
VersaTerm Pro	2.0	NCP
VideoWorks II	2.0	NCP//
VIP	2.2	NCP
Widgets	3.0	NCP
Word	3.01	NCP
Write	1.0	NCP//
WriteNow	1.0	NCP//
XPress	1.1	CP/NCP//
ZBasic	4.0	NCP

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- Plot a graph
- Generate a report, then send the output to your printer, or a text or MacWrite file
- Or all of the above

You can key in:

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- A series of equations—and solve for all variables
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- Calculator desk accessory
- 68881 math coprocessor chip support
- Powerful financial functions
- Built-in and user-defined math and financial functions
- Ability to generate reports complete with plots and lists
- Polynomial finder
- Inequality solutions
- Supports Macintosh II color monitor

Minimum system requirements:
Macintosh with 512K RAM, 128K ROM minimum
One 800K disk drive

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MISS NG PIEC S

If you believe there's no such thing as a bug ("That, my friend," said the software salesman, "is an undocumented auto-bomb feature, included at no additional charge with all our software"), you might also believe there's no such thing as a missing feature. If so, please contact me regarding some prime swamp land in Florida. The rest of you should check out the latest Miss ng Piec s chart from Robert ART Morgan. This month's subject is laser printers.

If you'd like to subscribe to his newsletter chock-full of missing features (and we mean that as a compliment), write to Ramifications Unlimited, PO Box 619, Dept. MU, Julian, CA 92036. For $25 a year, you can find out what you're missing. And let us know what kinds of feature comparisons you'd like to see; we'll pass your responses on to Robert. Write us at *MacUser*, 110 Marsh Drive, Suite 250, Foster City, CA 94404.

—J n Zilb r

Laser Printers—What's Missing?

✓ = missing feature ? = feature partially or awkwardly implemented (no mark is good news)

List Price	"Old" Apple LaserWriter+ $5795	Apple LW II SC $2799	Apple LW II NTX $6599	GCC PLP $1999	GCC BLP $3999	AST Turbo $3995	Qume ScripTEN $5295
RAM	1.5M	1M	2M	✓	2M	3M	2M
Max Optional RAM	1.5M	1M	12M	✓	3M	3M	3M
SCSI Port For Font Disk	✓	✓		✓	✓	✓	✓
Number of Resident Fonts	35	✓	35	✓	35	35	35
Capacity of Paper Tray in Sheets	100	200	200	150	150	250	250
Manual Feed						✓	
Handle Heavy Card Stock						✓	✓
Straight Paper Path Available						✓	✓
Legal Size Tray Available						✓	
Envelope Feeder Available	✓			✓	✓	✓	✓
"I'm Working" Light							✓
AppleTalk Support[1]		✓		✓			
Centronics Port	✓	✓	✓	✓	✓		
Serial Port		✓		✓			
PostScript Support[2]		✓		✓			
LaserWriter Plus Emulation		✓		✓			
LaserWriter Plus Font Family		✓		?[2]			
HP LaserJet Emulation	✓	✓		✓	✓		
Diablo Emulation		✓		✓	✓		
Full Page Bitmap (min:sec)	3:49	:52	1:20	1:50[3]	2:11	1:20	1:40
All Parts User Replaceable	✓	✓	✓	✓	✓	✓	
Sealed Toner Cartridge				✓	✓	✓	✓
Write White or Black[4]	Black	Black	Black	Black	Black	White	White

[1] *This enables you to share the printer between two or more Macintoshes. GCC offers a $500 option to make their PLP shareable. However, since all the processing is done on your Mac, this could be a very S-L-O-W way to go.*

[2] *If your printer does not support PostScript, your gray scale shading will look rather crude and you won't be able to print PostScript effects such as "text on a curve or spiral." It also means that you can't use PostScript fonts. GCC uses the Bitstream equivalents of most of the Adobe fonts.*

[3] *This time was achieved using a HyperCharged SE. Since the SE itself does all the processing for this printer, you can expect things to take longer with a standard Plus or SE. By the same token, if you own this printer, you can speed it up by adding memory and/or an accelerator board to your Mac.*

[4] *"Write White" printers apply a charge to the drum where you don't want toner to stick. "Write Black" printers apply toner to the drum where you do want toner to stick. Write White printers tend to have blacker blacks, but are more sensitive to the kind of paper you use than Write Black. The Write White printers sometimes scatter toner so badly that the letter "e" closes up. Unwanted specks can appear in random spots that have to be touched up by hand.*

Laser Printer "Band-Aids"

1. Avery has just introduced new sheets of mailing labels that can be auto-fed from the paper tray. This is good news for users of the AST TurboLaser since it lacks a manual feed. It's also good news for those of us who hate standing there feeding each sheet. Ask for product code 5160, 5260, 5261, 5161, 5262, 5163, 5164, or 5165 at your favorite paper supply store.

2. If you have a non-Apple laser printer, Apple's symbol is not in the printer resident Times or Helvetica. You'll have to use Chicago Symbols bitmap font or some downloadable that has it.

3. If your laser printer is not printing dark enough, try a good quality, laser compatible paper with good capacity like James River Dello Opaque English Finish. Sometimes the kind of paper makes all the difference.

4. You can compensate for a slower printer by using a print spooling program. Check out LightSpeed's *LaserSpeed* and SuperMac's *SuperLaserSpool*. Or, if you are using *MultiFinder*, just turn on background printing. The paper doesn't come out of the printer faster, but you get the Macintosh back more quickly to go on to the next task.

5. When printing multiple documents, you can set up a mass print rather than waiting for each document to finish before closing it, opening the next, and starting another print. Instead, quit to the *Finder*. Select all the documents you wish to print. Then select PRINT from the File menu. Assuming they were all created by the same application, the Mac will start up the appropriate application and print all the selected documents, pausing only at the beginning to ask for options.

6. Always turn off Smoothing when printing rough drafts. It's faster.

7. Use the page preview feature of your application to view the document before you try printing. This enables you to see glaring mistakes before you print. Previewing is much faster than printing. If your application does NOT have a preview mode, get the public domain Preview resource. Place it in your System Folder. Then go to CHOOSER under the Apple Menu. You will see Preview as a choice in addition to LaserWriter. Select it, close the box, and try printing. (Some spooling programs also give you a preview mode.)

8. For those of you who use downloadable fonts, you can save time by "permanently" downloading often used fonts. They remain as long as the printer is powered up (and not reset). Otherwise, they will be downloaded with each document that uses them. If you have a printer with 3 megabytes of RAM, there should be plenty of space for this.

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Letters ...

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Mary M. Carr
USX Exports
Herndon, VA

Uncle Dennis Tech Tips ...

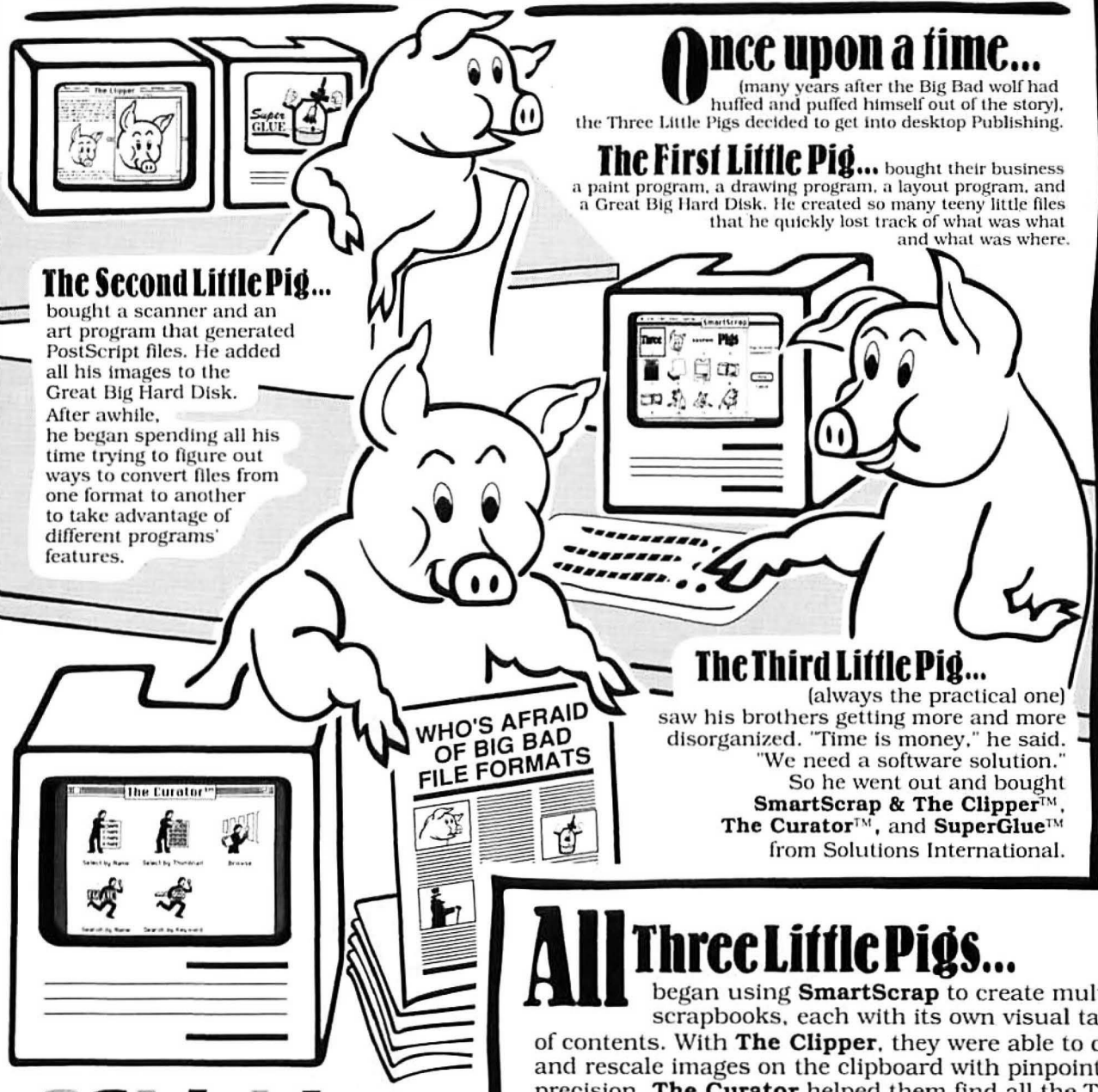
Rapid Windows

When you are through with your application which you opened after digging through a lot of folders on your desk top, the finder will spend a lot of time closing these windows. Avoid this delay by holding down the option key while opening your folders. Then when you return to the desk top the windows will not have been left open. And at the same time, to close many open windows, hold down the option key while you click on the first go-away box. All the windows will quickly close.



CE SOFTWARE - **Quickeys** - Allows virtually any mouse/key combination to be performed with a single key combination. Very simple to operate, a must for users with extended keyboards.....**$69**

The Three Little Pigs GET GRAPHIC



Once upon a time...
(many years after the Big Bad wolf had huffed and puffed himself out of the story), the Three Little Pigs decided to get into desktop Publishing.

The First Little Pig... bought their business a paint program, a drawing program, a layout program, and a Great Big Hard Disk. He created so many teeny little files that he quickly lost track of what was what and what was where.

The Second Little Pig...
bought a scanner and an art program that generated PostScript files. He added all his images to the Great Big Hard Disk. After awhile, he began spending all his time trying to figure out ways to convert files from one format to another to take advantage of different programs' features.

The Third Little Pig...
(always the practical one) saw his brothers getting more and more disorganized. "Time is money," he said. "We need a software solution." So he went out and bought **SmartScrap & The Clipper™**, **The Curator™**, and **SuperGlue™** from Solutions International.

All Three Little Pigs...
began using **SmartScrap** to create multiple scrapbooks, each with its own visual table of contents. With **The Clipper**, they were able to crop and rescale images on the clipboard with pinpoint precision. **The Curator** helped them find all the TIFF, PICT, PAINT, GLUE and EPS graphic files on the Great Big Hard Drive. What's more, because **The Curator** can easily convert images from one format to another (like EPS to PICT, or TIFF to PAINT), their format problems disappeared. They used **SuperGlue** to take finished pages from one program and treat them as if they were graphics in other programs.

Soon, the Three Little Pigs were finishing their projects in record time. And of course, **they published happily ever after.**

SmartScrap & The Clipper Best DA 1987 MacUser

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This Ad was made entirely on a Macintosh™ using Illustrator™, PageMaker™, GraphicWorks™, SmartScrap & The Clipper™, SuperGlue™, and The Curator™. It was printed on a Linotronic 300. Trademarks - Macintosh™: Apple Computer; Illustrator™: Adobe; GraphicWorks™: MacroMind.

Please circle 161 on reader service card.



For A Song

Music Publisher is a new notation program, due out by the time you read this, that bears a greater resemblance to object-oriented graphics programs like *MacDraw* than to other notation programs. Instead of filling the screen with rows of the symbols used to construct musical scores, *Music Publisher* features a single row of "tiles." Each tile contains a family of related music symbols.

For example, the "rest" tile has everything from whole rests to sixteenth rests on its different faces, like the numbers on each side of a die. You spin the tile to expose the rest with the needed value, which you can then position into your score. Other tiles provide symbols for notes, dynamic values, clefs and other notation symbols. The selection of symbols on each tile can be customized to the needs of the particular piece you're working on.

The result is a clean, spare interface that leaves most of the screen free for your score, without sacrificing quick and easy access to virtually any symbol you might need. Some actions — like collecting notes into a beamed group — are animated, providing greater positioning control. Additional features include selective global changes, automatic part extraction, support for lyrics or blocks of explanatory text and PostScript-compatible output. *Music Publisher* lists for $195. For more information, contact Shaherazam at PO Box 26731, Milwaukee, WI 53226; (414) 442-7503.

— Jon Zilber

What a Card!

Sending in those software registration cards can land you on all kinds of junk-mail lists, but it's often worth the risk. Lots of software publishers offer free upgrades to registered owners, but only if they know who you are and how to reach you.

Aba Software is sending free upgrades of *"Draw it again, Sam. . ."* 2.0 to registered owners. The new version adds bit-mapped graphics to the program. Call (800) 234-0230 for details, or write to PO Box 850, Frazier, PA 19355.

Mac II musicians: Stop jamming for a minute and listen up! *Jam Session* 1.1 fixes some bugs that might have interfered with your virtuosity at the keyboard. Contact Broderbund at 17 Paul Drive, San Rafael, CA 94903-2101, or call (415) 492-3500 for details of how to get your free upgrade. And Mark of the Unicorn has issued yet another automatic free upgrade to registered *Performers*. This one (Version 2.3) runs up to 60 percent faster (so you can record and play back even hotter licks and denser textures) and runs on a Mac II and/or under *MultiFinder* (with a few minor limitations). Contact MOTU at 222 Third Street, Cambridge, MA 02142; (617) 576-2760.

General Computer has a quasi-free upgrade for Version 2.0 of its *PLP* laser printer software. There's a nominal charge if you want the works (new manuals and new disks). But the company has given its corporate blessing to anyone who wants to get a budget version by copying the program from a dealer or from other PLP owners. Version 2.0 lets you install fonts on your hard disk for faster printing, and it has lots of other goodies such as "medium-draft" quality printing, a larger printable area, and track kerning. It also eliminates some of the work-arounds required with various third-party software packages. Call (617) 890-0880, or write 580 Winter Street, Waltham, MA 02154 for more information.

Free upgrades are more than a good idea: They're a way to get some free publicity. If you publish software and are offering a free upgrade, let us know. (And keep us posted on non-free upgrades, too.) Write to: Update Manager, c/o *MacUser*, Suite 250, 110 Marsh Drive, Foster City, CA 94404, or send electronic mail to 72257,2671 (CompuServe), macuser (MCI Mail), or X0259 (AppleLink).

— Jon Zilber

Any Modem Port in a Storm

The Macintosh gets under way on the high seas with *Navigate!*, a program that digitally charts a ship or boat's course. *Navigate!* also pinpoints the ship's position on the chart if you interface it with electronic devices that read longitude and latitude (like Sat-Nav, Loran and GPS). The positioning devices hook up to the Mac via the modem or printer port.

Once a course is laid in, *Navigate!* calculates the heading, range and estimated time of arrival to your destination.

Each chart disk covers approximately 2500 square miles of coastal and off-shore areas and all charts are consistent with the NOAA National Ocean Service geographic survey. Users can zoom in on harbor areas and customize the charts to mark favorite moorings or landmarks.

Future modifications include hooking up an autopilot to let the Mac do the steering as well as the charting. Also a sideband receiver could be connected to the Mac so that weather information, such as isobars, can be added (temporarily) to the charts.

Navigate! costs $1495 and chart disks are $99 each. It's available from Fair Tide Technologies, 18 Ray Avenue, Burlington, MA 01803-4721; (617) 229-6409.

— Ben Templin



Denmark rethinks the computer table...

The original MacTable was the perfect place for a Macintosh. Then the Macintosh changed shape. So we thought about it again and built a new one.

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Cabinet becomes platform for LaserWriter. Holds disks, manuals, and a full carton of paper.

One table fits all

The new MacTable fits every Mac made, be it 128, 512, Plus, SE, or the Macintosh II.

It has a place for everything. Hard disk, second drive, modem, keyboard, mouse, ImageWriter, and LaserWriter. Plus a carton of paper. Yet even with a full complement of gear, there's room to spread out for serious work.

Every surface interchangeable

Each of MacTable's four surfaces can be independently tilted — and interchanged! You can even make it right or left handed. So it accommodates any peripheral you'll ever have at comfortable working and viewing angles.

Stands the test of time

MacTable is meticulously built in Denmark, by craftsmen using pure beechwood and durable laminates. Its new, sturdy design and quality materials support even the heaviest equipment. And MacTable is now a new color: Platinum Gray, same as the new Macintosh line.

...again.



Interchangeable surfaces offer configurations for every size Mac.

Matching roll-away cabinet

The new free-standing cabinet (optional) is big enough to use as a stand for your LaserWriter or CPU. It features easy-glide casters, space for full-size binders, and a special place in the locking drawer that holds over 100 disks upright and secure.

New lower price

The new MacTable also has a new price. Just $289. Add the sturdy, matching cabinet for $139 more (all prices plus shipping and handling). And if you're not satisfied with MacTable for any reason, return it for a prompt refund (less shipping).

Before you buy an ordinary table for your Macintosh, think again. Then choose the Danish solution. The new MacTable.



The New MacTable®

- *New MacTable handles the entire family of Macs, including the new Macintosh II.*
- *Surfaces tilt independently for ergonomic comfort.*
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To order your MacTable or for more information call:
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MacTable design patent pending. MacTable is a registered trademark of Scandinavian Computer Furniture, Inc. Apple is a trademark of, and Macintosh is a trademark licensed to, Apple Computer, Inc. Price and design subject to change without notice.

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Apple can't touch this.



But you'll want to get your hands all over it.

"It beats the Apple® board hands down."

That's how *Macintosh Today* judged the MAC-101,™ our advanced keyboard for the Macintosh.™

It's not hard to see why.

With the MAC-101, you can work the same fast, simple way your mouse works—without leaving your keyboard.

And turn functionless function keys into a major resource.

It's the only keyboard that works with every model Macintosh.

It's also the only one Microsoft® recommends for *Word® 3*.

And the only one Aldus® recommends for *PageMaker.®*

Function is as function does.

Since the function keys on an Apple Extended Keyboard can't relate to most Macintosh software, their only real function is to take up space.

But the MAC-101 can find function keys a real job. By using our *101-Keys*™ enhancement software to assign them dozens of mouse or keyboard commands.

Even functions that would otherwise need numerous keystrokes—or mousestrokes—can now be assigned to just one key.

So you can rip right through your work. Without unnecessary detours to the mouse.



We make the MAC-101 for every Mac model—from 128 to II—and we make them in the USA.

Feeling is believing.

Obviously the MAC-101 is great news for every Mac user.

But for IBM® types who are feeling their way around on the Mac, the news is even greater.

Because our keyboard is laid out in a standard configuration that's identical to the IBM PC.

Which means that anyone who's used to an AT or PS/2—or a Selectric®, for that matter—will instantly know the MAC-101 like the back of their hand.



The MAC-101 lets you execute program commands with a keystroke—without having to reach for the mouse.

And type on it accurately, with the confident touch that comes only from our tactile, positive-response keys.

"Clearly in a class by itself."

That's how *MACazine* sizes up the MAC-101. While *MacWEEK* calls it "the most important accelerator you can buy for a Macintosh."

You can buy it for under $170—software included. And since it carries a two-year warranty, you'll be enhancing your piece of mind right along with your Mac.



Ours is the only keyboard that's recommended by Microsoft and Aldus for Word 3 and PageMaker.

So call 800/826-5398 (in California 800/592-9602) and find out where you can lay your hands on the MAC-101.

Once you do, you won't let go.

DATADESK

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Feed Me!

In the beginning, laser printing was even better than sliced bread. At least until everyone discovered that the LaserWriter paper tray needs to be refilled more often than a ravenous teenager. Fortunately, several new products are available that automatically feed your hungry printer.

Printing a letter with the first page on letterhead has always been a problem, but those days are over. BDT Products' LaserFeeder and MultiFeeder are a pair of multi-bin sheet feeders for the LaserWriter that let you print your first page on letterhead and the remaining pages on a different stock, and then address the envelope automatically.

The LaserFeeder (three paper trays plus envelopes) and MultiFeeder (six trays plus envelopes) feed the LaserWriter via the printer's manual feed slot, and increase the LaserWriter's paper capacity to 400 (LaserFeeder) or 1000 sheets (MultiFeeder). What's more, using "The Flipper," the MultiFeeder can collate and stack your documents in the proper order in a 400-sheet output hopper.

Of course, there are times when what you need most is a large paper supply. For those situations, The Laser Connection has released two solutions: the Paper Plus 500 and the Big Bin 1000. The Paper Plus 500 works with the Canon CX-driven LaserWriters, and holds up to 500 sheets of paper or 100 envelopes. The Big Bin 1000 is designed for Apple's new Canon SX-driven LaserWriters, the IISC, IINT, and IINTX. As its name suggests, the Big Bin 1000 increases the LaserWriter's paper capacity to 1000 sheets.

Both of Laser Connection's sheet feeders replace the LaserWriter's paper tray, and neither requires any additional software.

BDT's LaserFeeder and MultiFeeder are priced at $1795 and $5095, respectively. Contact BDT at 17152 Armstrong Avenue, Irvine, CA 92714; (714) 660-1386.

Laser Connection's Paper Plus 500 and Big Bin 1000 list at $995 and $795. Laser Connection can be reached at 7852 Schillinger Park West, Mobile, AL 36608; (205) 633-7223.

— Russell Ito





For the LaserWriter with a voracious appetite: BDT's MultiFeeder (top), and Laser Connection's Paper Plus 500 (bottom).

Applications Now Being Accepted

They don't make 'em like they used to. And maybe they never did. If you've got a boffo software idea or a product you could really use but don't have the time or inclination to turn it into a reality, why not share it with the Mac community? You just might see your product on the shelf at the software store. And, if we publish your idea, you'll see a $25 check in your mailbox.

Kathleen Miller of Arlington Heights, IL, has a kindergartner who's a whiz on the Mac but needs more practice writing with a pencil. What she wants is a program that converts text input into inch-high, dashed letters for her son to trace. "Here I am with an SE, *FullPaint*, *MacDraw*, and *MacWrite*, and I'm stuck with a pencil and ruler," writes Kathleen.

Great idea! You could try creating your own font of practice letters using *Fontographer* or another font editor. But a simple shareware font or utility would be even nicer.

Send your product brainstorms to: ANBA, *MacUser*, 110 Marsh Drive, Suite 250, Foster City, CA 94404.

— Jon Zilber

Can You Help?

Hang Up Hangup



There's a problem with *HyperCard*'s Phone stack. Though it dials through the modem, the modem remains off-hook after it dials. The result is a connection that sounds like someone's hanging on an extension. A quick patch to the stack will have the modem hang up — after giving you enough time to pick up the phone yourself.

First make sure your user level is set for Scripting. Open the Phone stack and select STACK INFO from the Objects menu and make a back-up copy of the stack just in case you have any problems. Click on the Script button, and you'll see how *HyperCard* controls the dialing.

Scroll down until you see the section that starts "on dial string" — it should be the third section. Between the eighth and ninth paragraphs of that section (just before the paragraph that reads "put empty"), enter the following two paragraphs (*exactly*, quotes, spaces, and all, but leave out the "1)" and "2)"):

1) wait 6 seconds
2) send "dial " & quote & empty & quote & " with modem " & quote & "+++ATH" & quote to Hypercard

While *HyperCard* will indent the paragraphs correctly, you may want to manually wrap the second paragraph with a Command-Enter just before the "+++ATH" string.

What this patch does is cause the stack to wait six seconds after dialing the number, then send the Hayes hangup command. That gives you six seconds to pick up the phone after the modem dials; if you don't pick up the phone that fast, you probably deserve to have it hang up on you.

— Daniel J. Rosenbaum

The Tracks of My Tears

Anyone who's ever dreamed of connecting a Mac to the company's mainframe has probably sat in a corner, quietly singing Smokey Robinson's lament more than once, but now you can stop your sobbing. Blackhole Technology and Qualstar have both introduced 9-track streaming tape drives for the Mac. Qualstar's Model 1260S Ministreamer and Blackhole's MacTAPE/SCSI connect directly to the SCSI port on any Mac, from the Mac Plus to the Mac II, and provide full read-write capabilities on IBM compatible tapes.

The MacTAPE/SCSI comes in both tri-density and quad-density (GCR format) versions that can handle IBM/ANSI compatible 556/800/1600/3200/6250 bpi tapes at a transfer rate of 100K per second, depending on the block size you're transferring and the type of Mac you're using.

The Model 1260S Ministreamer is a GCR format unit with multiple operating speeds that maintains a transfer rate of 80K per second.

Both tape drives come with utility software for backing up, as well as data transfer and conversion (ASCII/EBCDIC) software.

They're also multiuser compatible, and, depending on the operating system, can function as either fileservers or network resources. Companies that want the flexibliity of adding a mainframe later may find these drives an ideal option.

Both units are small enough to fit in any environment and, stood on end, the Ministreamer's footprint is the same as a sheet of letter size paper.

The MacTAPE/SCSI loads automatically, and the Ministreamer can read/write VAX back up tapes.

The list prices for all this power are: $7695 for the MacTAPE tridensity; $10,500 for the MacTAPE quad-density and $7995 for the Model 1260S Ministreamer. (That's the comptroller singing now.)

To find out more, contact Blackhole Technology at 225 East Street, Winchester, MA 01890; (617) 721-7690 or if you're outside Massachusetts, (800) 227-1688. Qualstar can be reached at 9621 Irondale Ave., Chatsworth, CA 91311; (818) 882-5822.

— Russell Ito



Transfer data from a Mac to a mainframe on 9-track tape with the MacTAPE/SCSI (shown), or the Model 1260S Ministreamer (not shown).

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Hardware

Hard Disk Drives by Everex, MacBottom, Magic, Relax, Rodime and CMS:

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60meg	849.00	899.00
91meg	1295.00	1395.00
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300meg	NA	2500.00

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68030 Accelerator	call
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Sony DS Bulk	1.47
Sony SS Bulk	1.09
MacDisk DS	1.25
MacDisk SS	.99
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Multicolored Ribbons	12.00
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Hypercard Handbook	19.95

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Call our customer service staff at 1-800-MAC-DISK for details.

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Please call for products not listed. We also rent software for 1/5 of the purchase price.

MacProducts USA

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The Bear Essentials

A new clip art package, *Mac Gallery*, is a collection of professionally drawn art work in *MacPaint* format. Two 400K disks (a third, free borders disk is included for a limited time) contain over 400 pieces of original art covering holidays, special occasions, food, sports, mortise cuts, borders — a veritable potpourri of clips for your newsletters, cards, business cards, flyers, certificates, and other creations. One interesting feature is Teddy Bear Fun, two files of ready-to-use and make-your-own bears with bear parts and apparel to make Mama Bear, Santa Paws, Super Teddy, and more.



Mac Gallery comes with a reference manual, *Mac Gallery Tour Guide*, filled with tips, techniques, hints, and ideas for combining graphic elements for special effects like showing motion, making reflections, adding shadows, and making special award certificates.

You can get Mac Gallery for $49.95 from Dream Maker Software, 4020 Paige Street, Los Angeles, CA 90031; (213) 221-9987.

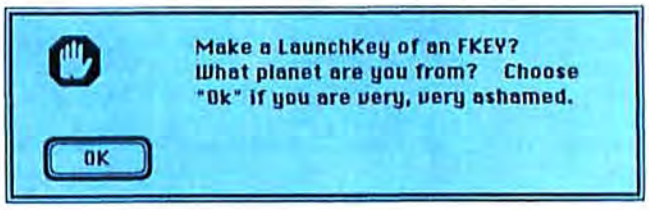
— Laura Johnson



DIALOG BOX OF THE MONTH

And all this time we thought the Mac was user-friendly. Little did we know that Don Rickles was moonlighting writing dialog boxes.

This zinger came to us courtesy of Will Cate of Gaithersburg, MD, who had it pop up while he was working in IMI Software's shareware program *LaunchMaker*. "I was making application-launching FKEYs with it, when I accidentally clicked the 'Make FKEY' button while an existing FKEY was already selected. The resulting dialog box gave me a pretty good chuckle." We liked it, too, so we've sent Will $25.



If you'd like to enjoy the kind of fame and fortune Will's basking in now, send us your best, worst, or most interesting dialog box. If we publish it, we'll send you a check for $25. Make sure you save a copy of your screen in *MacPaint* format (that's Command-Shift-3) on disk, so we can reproduce your masterpiece here at Dialog Box Central. Send your submissions to Dialog Herb c/o *MacUser*, 110 Marsh Drive, Suite 250, Foster City, CA 94404. No calls, please.

— H. D. Plant

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Electronic, My Dear Watson

If you've ever bolted upright at 3 a.m. and muttered, "Who was *the* woman?," "What was Mycroft's *real* profession?," or "How many times did Holmes call on Toby?," your hours of anguish are over. *An Electronic Holmes Companion* is an electronic edition of the "Canon," the four novels and 56 stories chronicling the exploits of the world's greatest consulting detective, Sherlock Holmes.

The *Companion* (due out from PsyLogic Systems by the time you read this) comes as straight ASCII text files that can be read into most word processors. It also includes a number of programs for indexing, analyzing the "readability" level of the stories, graphing the "themes" throughout the Canon, developing your own Holmes concordance, or comparing Conan Doyle's writing characteristics with those of other writers.

You also get a preface by John Bennett Shaw, of the Baker Street Irregulars, that includes his bibliography of 100 books and publications on the great detective. And to help further the cause of Holmesian scholarship, a listing of hundreds of scion societies and contact persons throughout the world is also included.

An Electronic Holmes Companion is available for $59.95 (Connecticut residents should add 7.5 percent sales tax) from PsyLogic Systems, PO Box 315, Tolland, CT 06084. "Come, Watson, the game is afoot!"

— *Russell Ito*

BUG OF THE MONTH

If students cram before taking a test, do teachers cram when they prepare one? You bet!

Joseph Grossbauer, of Chicago, discovered this month's bug during a test-writing cram session using the latest version of *Cricket Draw* (version 1.1). You see he was — well, let's let him tell it.

"I teach a class at a local college, and I was in the process of writing a mid-term exam. I should have prepared the exam earlier, but I knew that I had most of the test written, and all I had to do was prepare a few drawings. Best of all, I had just received the latest version of my favorite draw program (what a setup, right?). Well, everything worked beautifully; the program ran faster, the edges of the document were better defined, and best of all, I had more control manipulating the document. Now the big moment came, time to print! As the printer rolled out the first page, something was wrong. There were no lines! I tried again — same thing. I tried my old *System* and *Finder*, hoping maybe, just maybe, but I bombed out in spades. As the clock moved much too close to zero hour, I finally did the only thing I could: I drew in the missing lines by hand, and ran off to class."

We duplicated Joe's bug and discovered that it only occurs on lines drawn with *Cricket Draw*'s line tool and then printed (or not printed, as it turns out) on an ImageWriter II. The same image printed fine on our LaserWriter.

To compensate Joe for his frustration, and to thank him for giving us something to write about this month, we've sent him a check for $25. We'll send you an identical check (well, we'll put your name on it, instead of Joe's) if you send us an interesting bug. Send the gory details to Bugsy, c/o *MacUser*, 110 Marsh Drive, Suite 250, Foster City, CA 94404, and be sure you fill us in on your *System* and *Finder* versions, hardware, and any unusual DAs you may have installed. May all your catastrophes be minor.

— *H. D. Plant*

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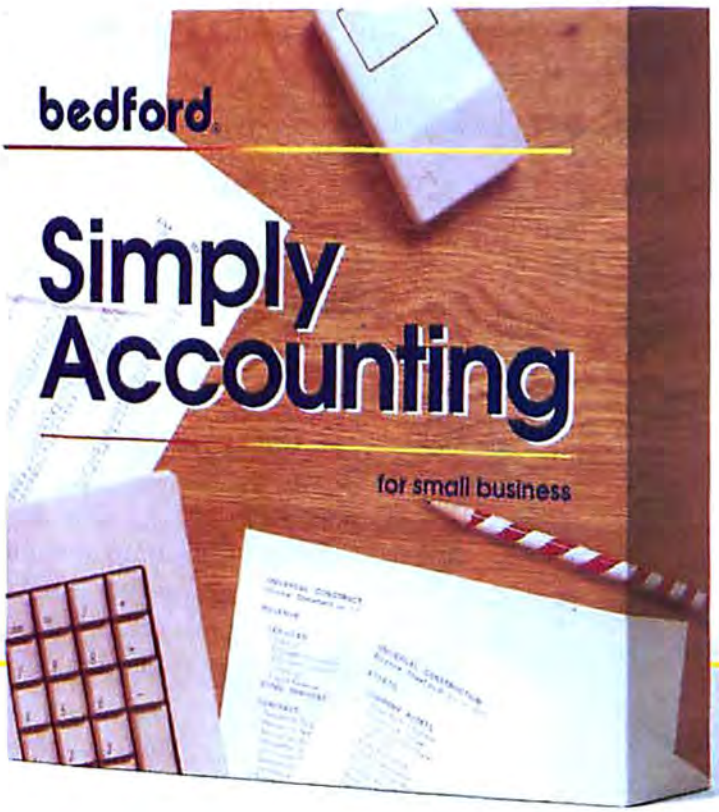
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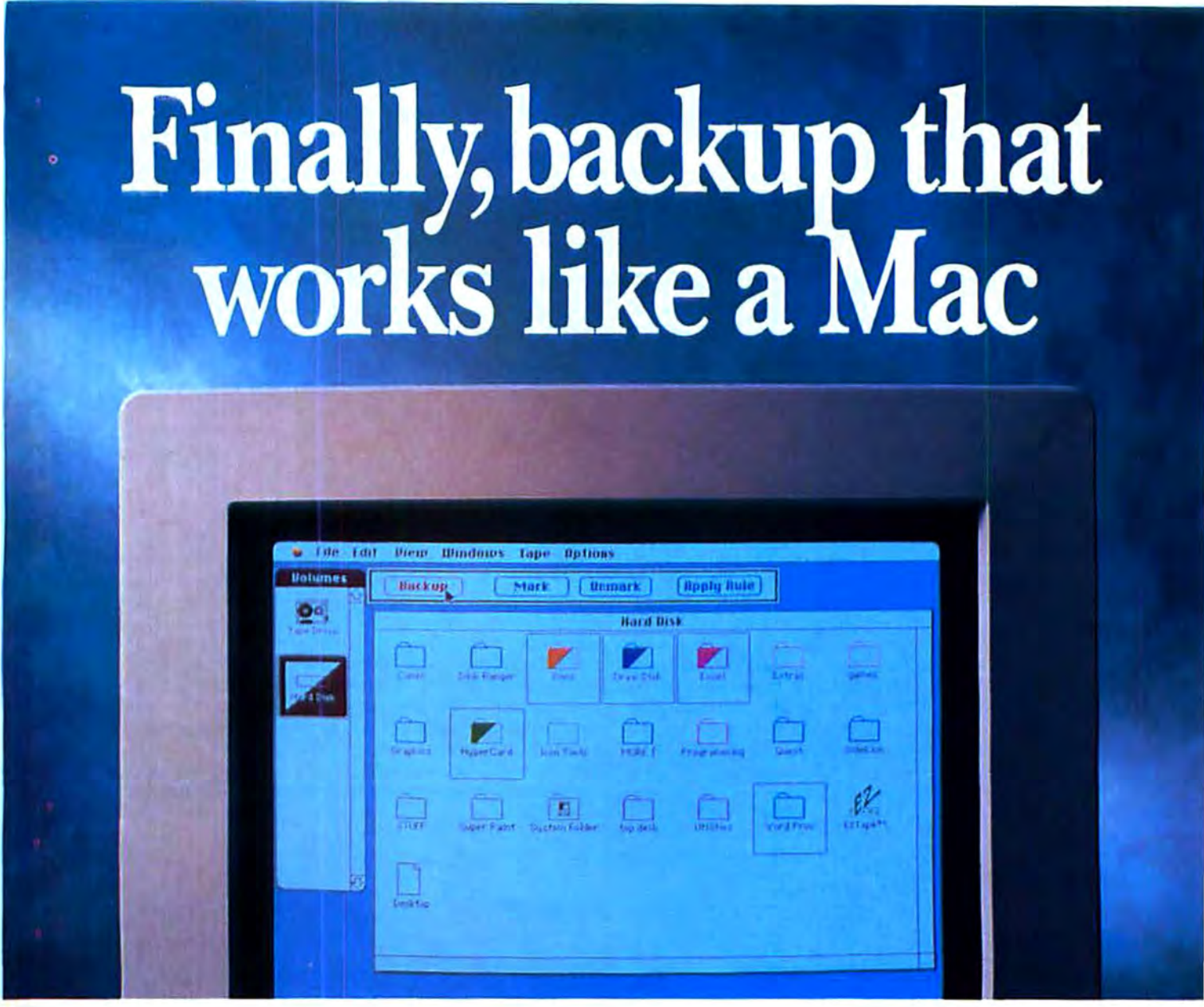
Requirements
- Apple® Macintosh™ computer with one megabyte of memory, 800K on-line storage and 128K ROM

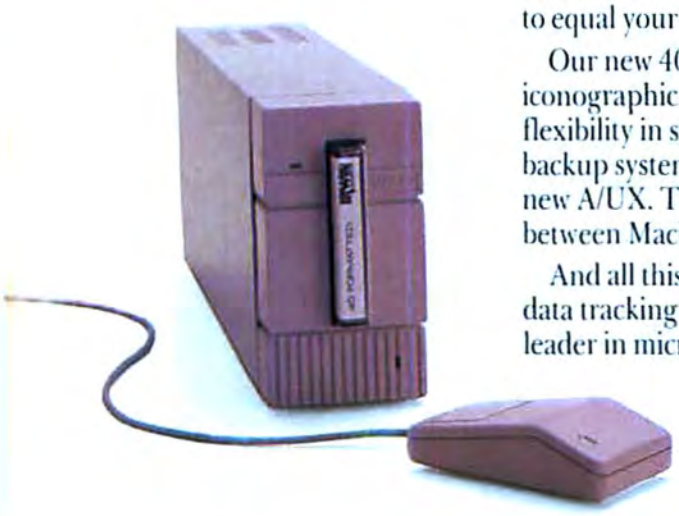
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Word processing tools come in all shapes and sizes. Unfortunately, the ones presented to speakers at Macworld Expo by show organizer Mitch Hall Associates didn't come with a spelling checker. (But what can you expect from a company that alphabetizes *The Macintosh Business Letter* under "T.")

GeoQuery Maps Out Markets

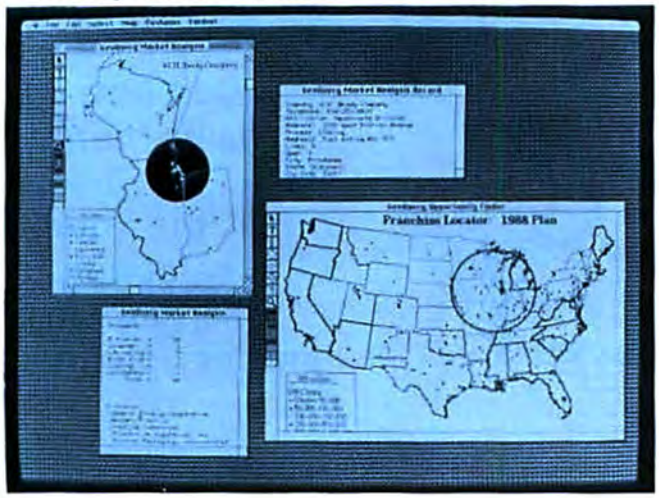
GeoQuery asks the question: "Can a map-based statistics package deliver enough market research information to be worth its $349 price tag?" If you need to know where to go with your product, *GeoQuery* can deliver customer information within any specified geographic area down to the state and county level.

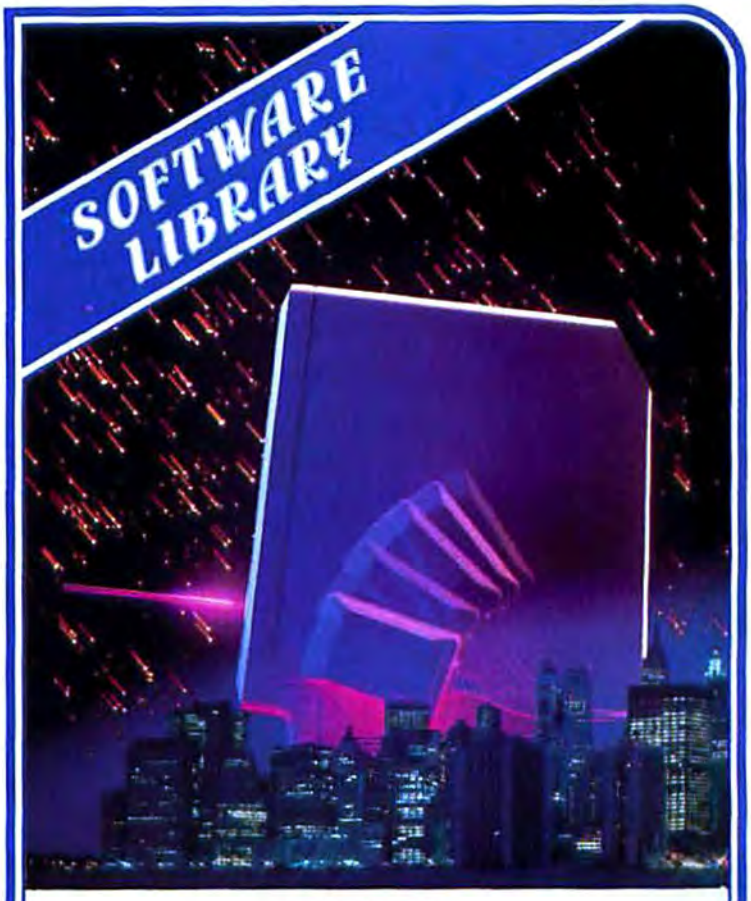
GeoQuery works in conjunction with a flat file manager, like *Excel*, to access a customer or company name by Zip code. You then look at other fields in your database to make decisions about doing business in a region. One nice touch is the ability to gauge distances in miles by simply dragging a line from point to point.

GeoQuery answers limited questions about your data based on geographic criteria. Optional modules include data for "Areas of Dominant Influence" and "Dominant Market Areas," demographic terms used by market and media researchers like Nielsen and Arbitron.

GeoQuery works in color on the Mac II, has a *HyperCard* interface, and includes LaserWriter support. The basic package contains a map of the United States including Alaska and Hawaii. Future plans call for a European edition. State and county maps come as options. It's available from Odesta, 94084 Commercial Blvd., Northbrook, Il 60062; (800) 323-5423 or (312) 498-5615.

— Ben Templin





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by Robert R. Wiggins

Freedom of Choice

In January of 1984 came the Macintosh. With 64K of ROM, 128K of RAM, and a powerful Motorola 68000 processor, it made an impressive debut. The industry press was excited, potential purchasers were enthralled, and Apple was hoping it had another hit on its hands. Amid the cheering and jubilation, there were those who remained doubtful, and most of them were business users in the lucrative corporate market. They had two main areas of concern, hardware and software. On the hardware side, business users were concerned that the Macintosh's closed architecture would severely inhibit the development of add-on hardware, such as hard disks, letter-quality printers, and 3270 boards for mainframe connectivity. On the software side, business users were unimpressed with the meager offerings available: *MacWrite*, *MacPaint*, *Microsoft Word*, and *MultiPlan*. They were especially miffed that *Lotus 1-2-3* was unavailable, as it had become the corporate standard spreadsheet (and best-selling program).

Unfortunately for Apple, almost all of the concerns of these business users were justified. It soon became apparent that 128K of RAM was not enough, and adding more memory was expensive and required a service call. Hard disks were few and far between, difficult to use, and expensive. Letter-quality printers were also difficult to interface to the Macintosh. Software was slow in coming, despite Apple's Evangelism program, since Macintosh software was more difficult to develop than IBM PC software and took longer to finish.

The scene shifts to January of 1988. The Macintosh is now a line of computers. The low end of the line is the Macintosh Plus, with 128K of ROM and 1 MB of RAM fairly easily upgradable to 2.5 MB or 4 MB, and with a SCSI port for attachment of a wide range of hardware products. The high end of the line, the Macintosh II, has 256K of ROM and 1 MB of RAM easily upgradable to 8 MB, a SCSI port, internal hard disks available, and eight NuBus expansion slots. When the middle machine of the line, the Macintosh SE with its single expansion slot, is included, it becomes apparent that Apple has addressed all of the major hardware concerns of the business community.

It is on the software side, though, that the changes are most apparent. Where once there was very little business software with only one product in a category (or none at all), now there are many choices, with three, five, or more products per category. Even the number of categories continues to expand, as desktop presentation, image processing, and forms design and management products appear. At the Macworld Expo in San Francisco in January, the number of products being shown was staggering, and many of them are still on their way, with more to come. Some examples:

Word processing: *MacWrite* 5.0, *WriteNow* 2.0, *Word* 3.01, and *Write* are just some of the competition for newcomers *FullWrite Professional*, *WordPerfect*, and *Nisus*.

Spreadsheets: Even the king, *Excel*, is starting to feel competitive pressure as *Graphsheet Mac*, *Modern Jazz*, and *Wingz* prepare to join *MacCalc* and *Trapeze* on the playing field.

Databases: *Foxbase+/Mac* joins the fray against *4th Dimension* and *dBASE MAC*, all three of which can manipulate *dBASE III* files. Other contenders in the relational battle include *Double Helix*, *Omnis*, and *Reflex Plus*.

Desktop publishing: Still a contest, with a new version of *PageMaker* getting ready to take on all comers, including *Xpress*, *Ready, Set, Go!* and *Scoop*.

Project management: *MacProject II* takes on *MultiUser MicroPlanner*, while *MacSchedule* and *AEC Information Manager* target different areas of the market.

Forms design and management: Even this new category has multiple entries, with the integrated *TrueForm* up against the separates *SmartForm Designer* and *SmartForm Manager*.

Utilities: This category features many head-on contests, such as *QuicKeys* versus *Tempo II*, *Suitcase* versus *Font/DA Juggler Plus* versus *Font/DA Switcher*, and *Redux* versus *DiskFit* versus *HFS Backup*.

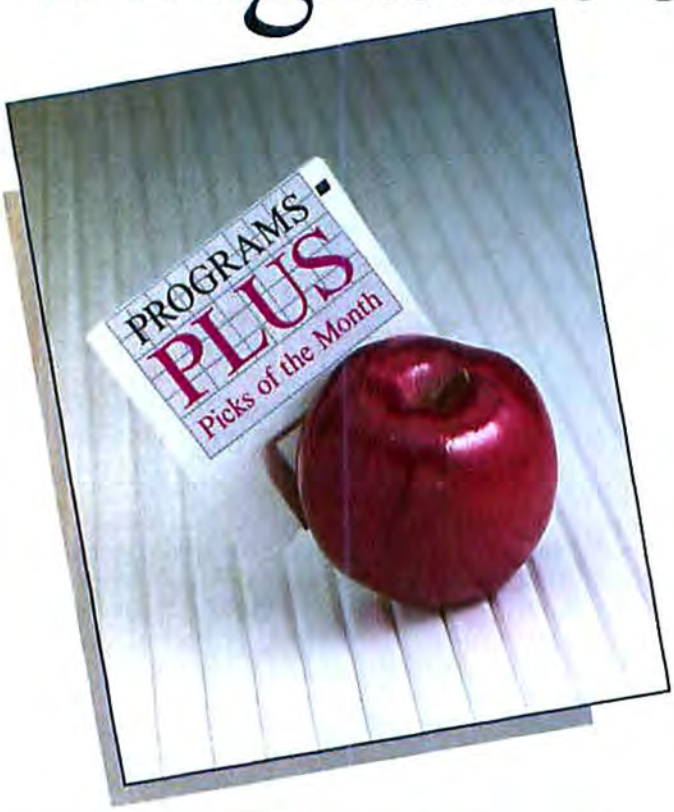
Communications: This is one category where there have long been three powerful contenders, and all three have been extensively revamped: *Smartcom II*, *Red Ryder*, and *Microphone*.

This diversity of offerings has one



BRIDGET STARR TAYLOR

Programs & Peripherals



Microphone II by Software Ventures



Microphone II is one of the most sophisticated, while easy to use communications programs available for any computer. The unique design of this program makes it an extremely powerful tool for the experienced user, and a saviour for the novice. Pre-programmed icons make it simple to access major information services such as Compuserve or Dow Jones, with automatic log-in and sign-on. You can record your entire session through the "Watch Me" feature, and replay it later through a single keystroke. The new version of *Microphone II* is now Multifinder compatible, and comes with a free copy of Glue, a graphics/text transfer utility.

Microphone 1.1 ..... **209.**

Utility Software

Apple Computer Switcher Const. Kit	14.	Read-It! TS *(For Thunderscan)*	79.
ALSoft Disk Express 1.10	26.	Read-It! O.C.R. *(For Image Scanners)*	199.
Font DA Juggler Plus	Call	**Software Power** Power-up Disk Optimizer	33.
Berkeley System Design Stepping Out II	55.	**Software Supply**	
Beyond Inc. Menu Fonts 2	32.	Suitcase or Power Station	38.
CE Software QuicKeys *(Macro Program)*	57.	**SRT** MacTree	39.
DiskTop 3.0 or CalendarMaker 3.0	29.	**SuperMac Software** SuperSpool	42.
Central Point Software Copy II Mac		SuperLaserSpool	82.
(Includes MacTools)	*Special* 20.	Multi-User SuperLaserSpool	199.
Electronic Arts Disk Tools Plus	31.	Diskfit 1.4	54.
Fifth Generation Systems		Network Diskfit 1.3	203.
FastBack For The Macintosh	59.	Sentinel	155.
Ideaform Disk Quick V2.10	25.	**Synex** Mac Envelope	15.
HyperBook Maker	30.	Mac Invoice	25.
Infosphere MacServe *(Network Software)*	158.	**TOPS** Tops For The Macintosh 2.0	
LaserServe *(LaserWriter Print Spooler)*	63.	or Net Print	119.
Olduvai Software ADBridge	67.	**Williams & Macias**	
DA-Switcher II	25.	myDiskLabeler w/Color	31.
Font Share	149.	myDiskLabeler w/LaserWriter Option	34.
Icon-It! *(Assign Icons to Menu Items)*	39.	**Working Software, Inc.** Findswell	29.

Rags to Riches 3 Pak GL/AR/AP Version III by Chang Laboratories



Rags to Riches Version III pro-ides users more "Choices" in their accounting selection, setup, operation and reporting! Each module has more options to let you customize the operation to the way YOU do business. It gives you more flexibility to format reports, invoices and statements to suit your personality. This is the fastest accounting package available for the Macintosh. Success in accounting can be yours with *Rags to Riches Version III.*

Rags to Riches 3 Pack *(GL/AR/AP)* Version III ..... **279.**

Laser F_X by Postcraft International Inc.



Since the advent of the desktop publishing industry, no product has proven to be as useful, or as easy to use as *Laser F_X* from Postcraft. Simply take any PostScript font and use any of the 30 special effects to create a dazzling typographical masterpiece. You can print directly from Laser F_X or paste into Quark XPress, Ready, Set, Go!, Microsoft Word, or most other popular desktop programs. It can also be used to create special effects in newsletters, designing logos, or adding that extra pizazz to your presentation. *Laser F_X* also has the ability to read PICT or paint files created in other programs such as MacDraw or MacPaint. Bring your desktop software and laser printer into the next generation with *Laser F_X*.

Laser F_X ..... **117.**

Desk Accessory Programs

Affinity Microsystems Tempo II	94.	**Imagine Software**	
AffiniFile	46.	Smart Alarms & Appointment Diary	35.
Borland SideKick V2.0	59.	Multi-User Appointment Diary	
Cortland		with Smart Alarms	89.
Top Desk	32.	**Solutions, International**	
Greene, Inc.		SmartScrap & The Clipper	36.
QuickDex 1.4	39.	**Symmetry** HyperDA *(Req. 512K)*	38.

Languages

Apple Computer MacPascal	99.	**Microsoft**	
Borland Turbo Pascal	65.	Microsoft Basic Interpreter 3.0	65.
Turbo Pascal Numerical Methods	63.	Microsoft Basic Compiler 1.0	127.
Turbo Pascal Tutor	43.	Microsoft Fortran Compiler 2.2	180.
Consulair		**TIIINK Technologies** Lightspeed C	109.
Macintosh 68000 Development System	59.	Lightspeed Pascal	65.
Mainstay		CAPP's for Lightspeed C or	
V.I.P. *(Visual Interactive Programming)*	85.	CAPP's for Lightspeed Pascal	49.

Communications Software

Apple Computer MacTerminal	99.	**Software Ventures**	
Compuserve Compuserve Starter Kit	24.	Microphone II *(Includes Glue)*	*Special* 209.
DataViz MacLink Plus with Cable	145.	**Think Technologies, Inc.**	
Freesoft Red Ryder V10	49.	InBox-Starter Kit V2.0	
Palantir InTalk V3	99.	*(3 Personal Connections)*	209.

to Polish Up Your Mac...

Canvas by Deneba Software



Canvas is truly the complete graphics environment for the Macintosh. If you need a draw program, a paint program, text editing, high resolution images, embedded PostScript or more, then *Canvas* is for you. You can rotate objects, create multiple duplicates of an object or group of objects, or view and edit drawings and text at any magnification or reduction from 3.125% to 3,200% of the original. You can also use the desk accessory version of *Canvas* (included) to edit your graphics without leaving your favorite desktop program, database, spreadsheet or word processor.

Canvas ..... **109.**

Cutting Edge 800k Drive by Cutting Edge, Inc.



The ***Cutting Edge 800k Drive*** features an LED in-use light, a manual eject button, and a compact case *(available in beige or platinum)* that matches Mac aesthetics. It's compatible with old and new Mac ROMs so you can use it on a standard Mac 512k, a MacPlus, or a Mac SE. The *Cutting Edge 800k Drive* also has a MTBF rating of over 11,000 hours, and offers advanced power and design at an economical price.

Cutting Edge 800k External Drive ..... **175.**

WorksPlus Command by Lundeen & Associates



WorksPlus Command is the most powerful macro package available for use with Microsoft Works. You can record an unlimited number of keystrokes, open and close documents, even move information between Works modules, and execute them with a single keystroke. You can print multi-column labels and reports, automatically generate table of contents and indexes for your word processing documents, even dial your phone from your database. For those who wish to write your own unique macros, *WorksPlus Command* includes a full macro programming language similar to Pascal. All this and more makes *WorksPlus Command* a program no Microsoft Works user should be without.

WorksPlus Command ..... **60.**

MacSnap Internal Memory Expansions by Dove Computer Corporation



It's a safe bet that no matter what Macintosh model you have, Dove Computer has a ***MacSnap*** memory expansion product that matches your needs. That's because Dove has an extensive line of high quality memory and productivity enhancement products available. All Dove products are easy to install and represent a superior value! We've selected some of the most popular models, and are offering them at special prices. All models listed include Dove's RamSnap software, their intelligent ram management software.

MacSnap 2SE ..... **289.**
MacSnap 524E ..... **120.**
MacSnap 524S ..... **215.**
MacSnap 548E ..... **359.**
MacSnap 548S ..... **435.**
MacSnap Plus 2 ..... **249.**

Copy II Mac by Central Point Software



Copy II Mac has always been the standard by which all other backup software is compared to, and it keeps getting better! It was awarded the 1987 MacWorld-World Class Award, MacUser Editors Choice Award, A+ Readers Choice Award, just to name a few. *Copy II Mac* is really seven applications in one, including the ability to make backups of "copy protected" software (for archival purposes only), and Copy II Hard Disk, which lets you run some protected software directly from your hard disk, RAM disk, etc. Also included is MacTools, which is a general disk and file utility with a variety of useful options, including a hard disk undelete files option. It's plain to see why *Copy II Mac* has already sold over 100,000 copies.

Copy II Mac ..... **20.**

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Game Software

Access World Class Leader Board Golf	24.
Accolade Hard Ball	23.
Activision Firepower	16.
Shanghai or Romantic Encounters	24.
Tass Times in Tonetown	21.
Might and Magic	37.
Artworx Bridge 5.0	22.
Avalon Hill Mac Pro Football	29.
Baudville Award Maker Plus	27.
Broderbund Ancient Art of War	27.
Bullseye Software	
Fokker TriPlane or Ferrari Grand Prix	33.
Electronic Arts Ogre	20.
Reach for the Stars	32.
Starfleet I	37.
Venture's Business Simulator	47.
ChessMaster 2000, Patton vs Rommel or Scrabble	28.
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EPYX Winter Games or Sub Battle Simulator	24.
Hayden Software Sargon III	29.
Infinity Software, LTD. Go	25.
Infocom Bureaucracy, Leather Goddesses of Phobos, Nord & Bert, Plundered Hearts, Sherlock, or Stationfall *(each)*	24.
Beyond Zork	32.
Hitchhiker's Guide to The Galaxy	18.
Science Fiction Classics	35.
Zork Trilogy	44.
Intracorp Bumper Sticker Maker	35.
Business Card Maker	36.
Microsoft Flight Simulator 1.02	32.
Miles Computing Inc.	
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Harrier Strike Mission II or The Fool's Errand	27.
Fool's Errand Hint Booklet	7.
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Psion Psion Chess *(3D & Multi-Lingual)*	31.
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Police Quest	35.
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XOR Software NFL Challenge	65.
Pro Challenge	31.

Laser Printers & Digitizers

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TurboScan	1199.
Impulse	
Impulse *(MacNifty)* Audio Digitizer V2.0 w/Soundwave	149.
Koala Technologies Corp.	
MacVision *(Digitizer)*	169.
New Image Technology Magic Digitizer *(Mac 128/512k or MacPlus Version)*	249.
Summagraphics MacTablet 12x12 size	379.
ThunderWare ThunderScan V4.0 with Power Port *(Mac 512K, 512K Enhanced, MacPlus, and Macintosh SE)*	199.
Mac II Power Accessory	42.

Accessories

Abaton ProPoint *(ADB TurboMouse for Mac SE & Mac II)*	119
Bech-Tech Fanny Mac *(Beige or Platinum)*	65
Cambridge Automation Numeric Turbo	99
Central Products	
MacOpener *(All In One Mac Tool)*	16
Curtis Manufacturing	
Diamond-Surge Suppressor-SP-1	29
Emerald-Surge Suppressor-SP-2	36
Ruby-Surge Suppressor-SPF-2	55
Sapphire-Surge Suppressor-SPF-1	47
Cutting Edge Cutting Edge EADB-105 *(Mac SE & Mac II)*	139
DataDesk MAC-101 Keyboard/Beige *(128k/512k & MacPlus)*	139
MAC-101 ADB Keyboard/Platinum *(Mac SE & Mac II)*	139
Ergotron	
MacTilt or MacTilt SE *(Platinum Color)*	69.
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Macinware Plus Carrying Case	64.
Macinware SE Carrying Case	74.
Imageware II Carrying Case	44.
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Triple Micro Cabinet *(holds 135 disks)*	28.
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Macintosh II Monitor Cable Extension	33.
Mouse Pocket *(Reg. or ADB)*	8.
Mouseway *(Mousepad)*	8.
ImageWriter or ImageWriter II Cover	9.
Macintosh Plus/SE Dust Cover	9.
Mouse Cleaning Kit w/Pocket	17.
Disk Drive Cleaning Kit	20.
Tilt/Swivel	22.
Universal Copy Stand	23.
Apple Security Kit	34.
Polarizing Filter	33.
Printer Muffler 80	38.
Printer Muffler 132	51.
Control Center	63.
System Saver Mac *(Beige or Platinum)*	64.
Super Base	Call
System Saver SE	Call
Masterpiece Mac II	Call
A/B Box *(MacPlus Only)*	63.
Turbo Mouse *(Reg. or ADB)*	82.
Lightgate Felix *(Second Generation Pointing Device)*	99.
Mouse Systems A+ Mouse *(MacPlus)*	69.
A+ ADB Mouse *(Mac SE/Mac II)*	89.
Moustrak MousePad 7"x9" Size	8.
MousePad 9"x11" Size	9.
Moustrak L/F *(Low Friction)*	9.
Nuvotech	
EasyNet *(Specify Din 8 or DB-9)*	27.
Orange Micro Grappler C/Mac/GS *(Parallel Interface for the Mac)*	77.
Grappler L/Q *(Parallel Interface for 24 Pin & Laser Printers)*	99.
Orchid Technology ColorVue SE	505.
Ribbons Unlimited	
Available in Black, Blue, Brown, Green, Orange, Purple, Red, Yellow, Silver & Gold	
ImageWriter Ribbon-Black	4.50
ImageWriter Ribbon-Color	5.
ImageWriter Rainbow Pack *(6 Colors)*	25.
ImageWriter II-Four Color Ribbon	11.
Silicon Comforts MacChimney *(Very Effective Cardboard Laminate Convection Cooling Device)*	16.
SoftStyle MacEnhancer	165.
The Madson Line	
Professional Series Carry Cases In Black Ballistic Nylon	
Mac(Plus) Carry Case	79.
Mac SE Carry Case	99.
ImageWriter I (II) Carry Case	75.
TOPS Tops Tele-Connector DB-9	39.

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BASF 3½" SS/DD Disks *(box of 5)*	8.
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Sony 3½" SS/DD Disks *(box of 10)*	13.
Centech 3½" SS/DD Color Disks *(10)*	16.
Fuji 3½" SS/DD Disks *(box of 10)*	13.
Maxell 3½" SS/DD Disks *(box of 10)*	13.
Verbatim 3½" SS/DD Disks *(box of 10)*	13.
3M 3½" SS/DD Disks *(box of 10)*	14.
C.Itoh Color Disks SS/DD *(box of 10)*	22.
Double Sided 3½" Diskettes	
BASF 3½" DS/DD Disks *(box of 5)*	9.
Bulk *(Sony)* 3½" DS/DD *(10)*	16.
Centech 3½" DS/DD Color Disks *(10)*	19.
Sony 3½" DS/DD Disks *(box of 10)*	18.
Fuji 3½" DS/DD Disks *(box of 10)*	19.
Maxell 3½" DS/DD Disks *(box of 10)*	20.
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chief beneficiary: the end user. With multiple programs competing in a free market, each product has to be the best it can be if it hopes to siphon sales from the others. The end user of the product gets the benefits of these "feature wars," as each product attempts to outshine the competition, and all the products improve over time.

Those business users who passed on the Macintosh back in 1984 are starting to come over in droves as they find out about the wealth of choices available. Of course, the IBM PC still leads in software availability overall, especially in vertical markets, but with application development systems like *4th Dimension* and *Double Helix* on the Mac, some users are finding that they can develop custom applications in-house.

The availability of a wide range of Macintosh software and hardware products finally gives business users true freedom of choice. No longer are they tied to the IBM PC by software. Now they are free to choose whichever system works best for them.

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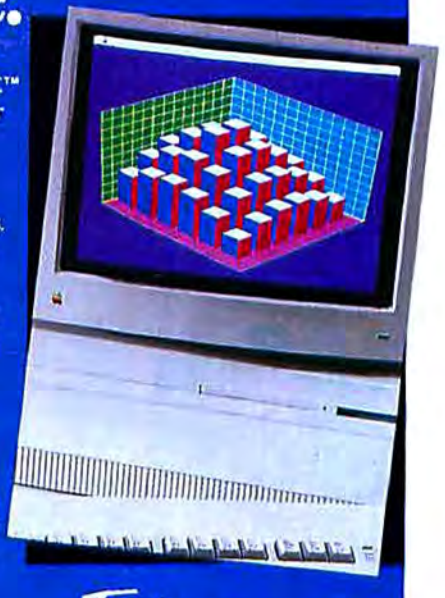
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by Michael D. Wesley

Educating the Masses

Some of you may be tired of reading my views on the Macintosh as an educational revolutionary. If not, you probably will be by the time I finish writing about the subject. The fact is that as much as I care about the Macintosh as a whole, I care about education and children a great deal more. I have at last found a way to speak about both — so look out.

Quite a large number of people have written to or called me in response to the points I made in two previous columns (November '87 and January '88). I'd like to share some of their comments here, both to acknowledge them and to throw the weight of public opinion behind my ideas.

All but one of the letters I received were in agreement with my beliefs that the Mac is a better educational tool than an Apple II (or any other personal computer, for that matter) and could revolutionize education "if only" — If only there were dollars to buy it, if only there were good kids' software to run on it, and so on.

I can't resist sharing the lone dissenter's comments first, edited for length but not content (with my comments in brackets) and asking my readers to respond.

Bob Consorti, On Three Inc., Ventura, CA, says:

"Dear Mr. Wesley:

"I must take exception to your 'Two Bits' Worth' in the November issue of *MacUser*. Your statement that the Macintosh is a *much better* kids' machine than the Apple II product line is silly. Perhaps if you're pushing your kids to write stock analysis or learn spreadsheets from the age of 2 up [*and why not?*]. But if you're interested in helping the development of your child, the Apple II series has tens of thousands of programs that will help — not a paltry few. [*I never disputed the quantity, just the quality.*]

"Regarding your statement that the Mac has better speed than the IIGS, it would be nice for all of us to have Cray's [*sic*] for our kids for the 'Ultimate in Speed.' Perhaps you're equating computing speed with operational speed. [*I always thought there was a relationship there.*] Yes, the 68000 does things faster than a 6502 or 65816. But have you ever run any educational software on the Apple II? [*Yes, a vast amount, much of it with kids. That's why I feel qualified to dispute its quality.*] It (the Apple II) always seems fast enough to me. [*But are you a ten-year-old?*]

"If you had done your homework, you'd know that the resolution on the GS is better than that on the Mac — horizontally. Vertically it's less. It does make a difference in the number of lines you can fit on a screen when doing word processing and other tasks, but the programs that are available make fine use of screen resolution. [*Homework 101: Resolution is not just a matter of how many pixels wide a display is, nor of how many lines high, but also of how many dots per inch. If you're still not convinced, compare any typeface on the IIGS with the same typeface on a Mac.*]

"Your anecdote about Jeremy really cracked me up. That poor kid. [*?*] I wonder what happens when he realizes that there's more to life than white and gray or whatever single color he 'visualizes' they [*sic*] gray to be. Kids *do* need color. Ask any child psych, and that person'll tell you that painting your kids' rooms in multicolors is far better for their development than painting them gray and white. [*1) Did I mention that I have degrees (with honors) in Education and Child Psychology? 2) I'm confused — I thought we were talking about computer screens. 3) Jeremy doesn't feel a bit deprived. He has an Apple II at school but finds it boring. Same with Justin, age 11, who insisted I mention his name in my column, too.*]

"The interface of the Mac is good, but it's not the perfect interface for all programs — specifically not for educational programs where menu bars and other items in the Mac interface could easily distract the kids from the real object of the program. I love the Mac interface because I use it every day in my word processing, DTP, and other needs. But I doubt that kids need access to sophisticated desk accessories and other things inherent in the Mac interface. [*So why did Apple put QuickDraw, and menus, and so on into the Apple IIGS?*]

"Kids can write, paint, and do thousands of *other* things on the Apple II. It seems to me that the fact that you're teaching an advanced computer-usage class for children has impaired your ability to see what 'nongifted' children use computers for. They aren't desktop publishing, or writing reports, or doing financial analysis. [*I beg to differ. Some of them are indeed doing just that, as you'll see if you read on.*] Let kids be kids. [*I assure you, my kids act suspiciously like kids most of the time.*]

"The II has it's place and the Mac has it's [*sic*]. Please don't try to confuse the issue with half-truths and a lack of knowledge."

One last point, Mr. Consorti, then I'll let some other readers speak. The comment you make about my impaired judgment with regard to nongifted kids is a common response from people, often teachers and parents, who simply don't know what they're talking about. As I mentioned in one of my columns, the *techniques* of good teaching do not vary greatly whether a child is gifted or a slow learner. I have worked extensively with children of all abilities, and you'd be amazed at what nongifted kids can do if you give them the *right* tools and the *right* support



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THE LIGHTER SIDE

Bryan Jones, publisher/editor, *The Dripping Springs Dispatch* ("The Best Little Newspaper in Texas"), says:

"I am a single parent with two elementary-age (7 and 10) children. I also happen to use Macintosh computers to publish my weekly newspaper. Since I usually cannot leave my office when my kids get out of school, they spend many afternoons with me as a consequence. This has proved to be little hardship for myself or my children. They quickly learned the appeal of Macs and prefer (when they can appropriate one from my staff) to hack on a Mac in lieu of playing outside.

"My kids are now accomplished users of the hardware and the software. The Macintosh interface appeals to children of all ages (including those in oversized bodies).

"This year both my children are being exposed to Apple IIe computers at school. They now return to my office and greet the Macs like familiar and reliable friends. The software they most enjoy are graphics-oriented — such as *MacDraw* and *SuperPaint* — and they have become, in fact, more proficient than myself. They also 'publish' on *PageMaker;* write letters to imaginary pen pals with *Word;* and, of course, play some of the games I got (just for the kids, right?) such as *Dark Castle, Shadowgate,* and shareware stuff.

"In conclusion, you were absolutely on the mark when you said that the Mac is a *great* kids' computer. It's also a great parents' computer. It's a great business computer. It's just a great computer. Period."

Thanks, Mr. Jones. I'd love to see a copy of your newspaper.

Leroy O. Stone, Arawak Communications, Ottawa, Canada, writes:

"Your recent articles about children and the Macintosh certainly struck a responsive chord here.

"We have owned Apples since 1981, and my home has II Pluses, IIe's, IIc's, and Macs. To make a long story short, my four-year-old began asking to use *MacPaint* about a *year* ago! Now she can do a few things competently in *MacDraw* and *Ready, Set, Go!* as well. She has an amazing ability to string together meaningful sets of mouse commands.

"For years I have provided both children (the other is 14) with mild games and educational programs and Logo experience on the II's, emphasizing color. My first shock? My four-year-old doesn't care much about color! Half the time she is quite happy to deal with shades of gray! Now, she has a clear preference for the Mac! Why? — I am not sure; but I think it is a question of being in *far* greater control over what the computer does with the Mac than with the others."

The Mac empowers kids. What more could you ask from an educational tool?

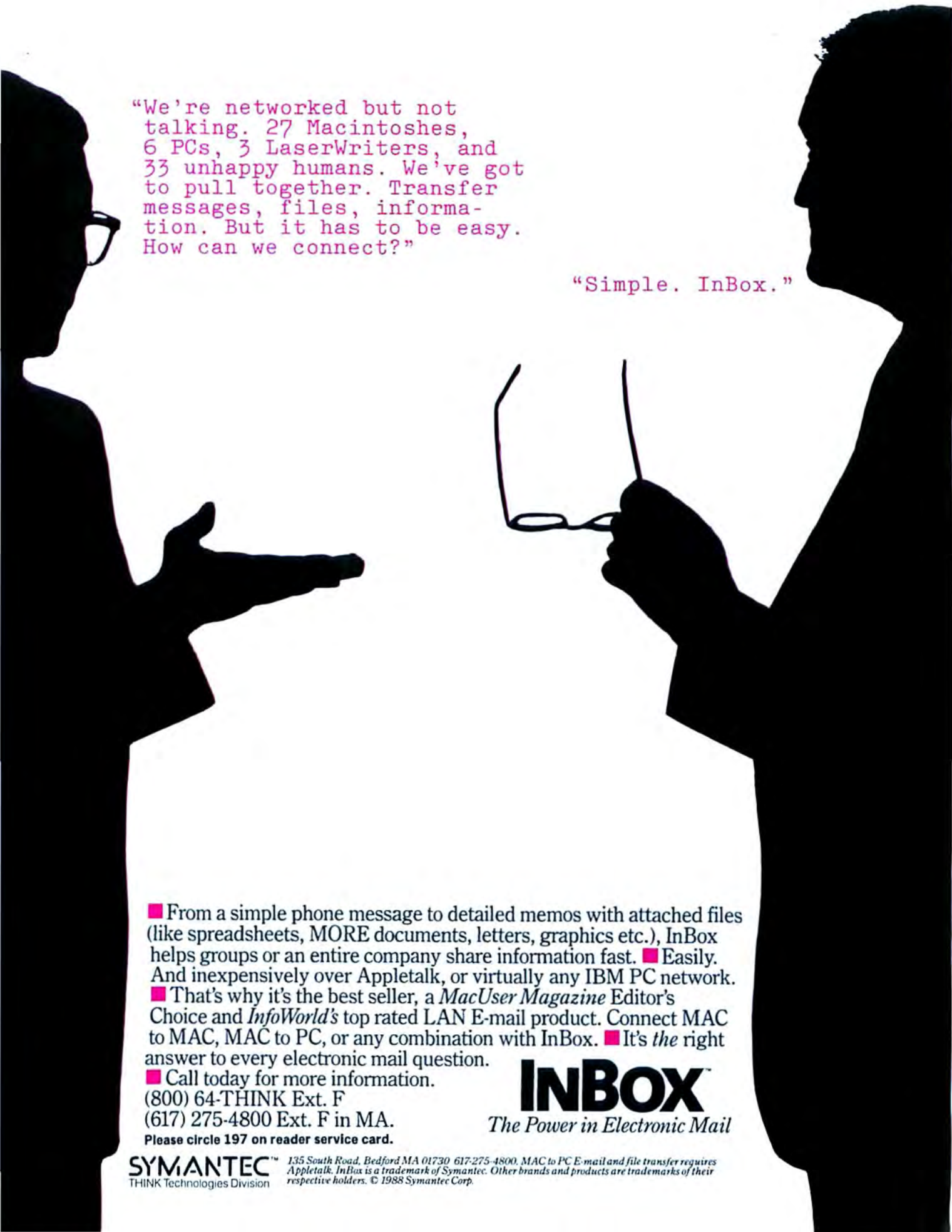
I agree, Mr. Stone. The Mac empowers kids. What more could you ask from an educational tool?

Hardie Johnson, Lewisberry, PA, says:

"I enjoyed your editorial with regard to why the Mac can't read (*MacUser,* January '88). But if you submitted your columns on a bimonthly basis, we would get to read all of them. [*Good point. The distinction between bimonthly and semimonthly is a personal pet peeve, yet I used the wrong one in my column out of carelessness. My contribution to Two Bits' Worth appears semimonthly.*]

"[*About educational software*] — Right on target. Partly because the stuff is written and used by uninvolved educators. GIGO (garbage in, garbage out). Is *HyperCard* the answer? Well, HyperText anyway.

"Teachers are limited because they work for school boards. School boards are not educators, they are businessmen. Once you have sold the board on computers, you have two problems. The short-range prob-



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lem is software that was not in the original budget, so the teachers must steal to live. The long-range problem is that schools that bought in three years ago are stuck with the (relatively) obsolete Commodore 64's and Apple II Pluses. The race is not always to the swift."

Well, Mr. Johnson, having once served on a local school board for four years (one as its chair), I can tell you that some school-board members are educators, but you're right that money is an enormous factor, as several other writers have mentioned. Schools often have to make do with what they have — I still see Tandy TRS-80 Model I's in use in some schools.

Shari Boles, Morrison, IL, writes:

"Your article 'The Mac and Education: What's Wrong' really hit home with me because I feel very strongly about giving my kids the best affordable education — especially as my children are gifted, talented in several areas of musical ability, and on the honor roll most of the year.

"I was debating whether, after six months' ownership of my SE to fork over the added expense of game software for these kids who already exceed my talents on the SE. Christmas is around the corner, and there have been requests for *World Builder* and *SuperPaint*. I was therefore delighted that you listed them as two of the top five games for kids more than ten years old.

"Now that I have wrapped these goodies up for the kids, I wonder if, after all is said and done, I will ever have the opportunity to gain access to my beloved SE. Nowadays there is a line forming at our house, and I wish the school system would install its own SE so I can have mine! All jest aside, however, I would not go back to our pre-SE days for anything — my kids are worth it!"

No kidding. They're the hope for the world. I hope they're enjoying their Christmas presents.

John Rife says:

"I'm a fourth-grade classroom (self-contained) teacher in north central Wisconsin. We are a small rural school (K-6 and about 140 students) and part of a large district of 500+ square miles and 3000+ students.

"The computer coordinator for the district is a part-time person and has a limited budget. He does have a Macintosh for his workstation. He has allowed me to bring that Macintosh to my classroom for one week per month this school year. (His secretary has an IBM something, and there is an Apple IIGS available in their office, too.)

I'm looking for a way to get the Macintosh into this classroom full-time. Do you have any ideas, contacts, schemes, suggestions?'

"There are two Apple IIGS's and three Apple IIe's in our building. I was the only teacher who used the computers until this month. I have gotten software together and encouraged the other teachers to use them. Finally, they are in just about every classroom now, but I did have them all in my room full-time for the months of September, October, and most of November. The Macintosh was usually the machine of choice — and the only programs we had were *MacWrite* and *MacPaint*.

"I was intrigued by the fourth graders' reaction to the Macintosh being in the room. Some of the statements made in your November editorial fit perfectly.

"I'm looking for a way to get the Macintosh into this classroom full-time. Do you have any ideas, contacts, schemes, suggestions? Our class is willing to help with research or reporting."

Well, I can put your request in my column and hope that someone responds.

A final note: Some of you wrote with questions that I will answer in personal letters. Thanks for writing.

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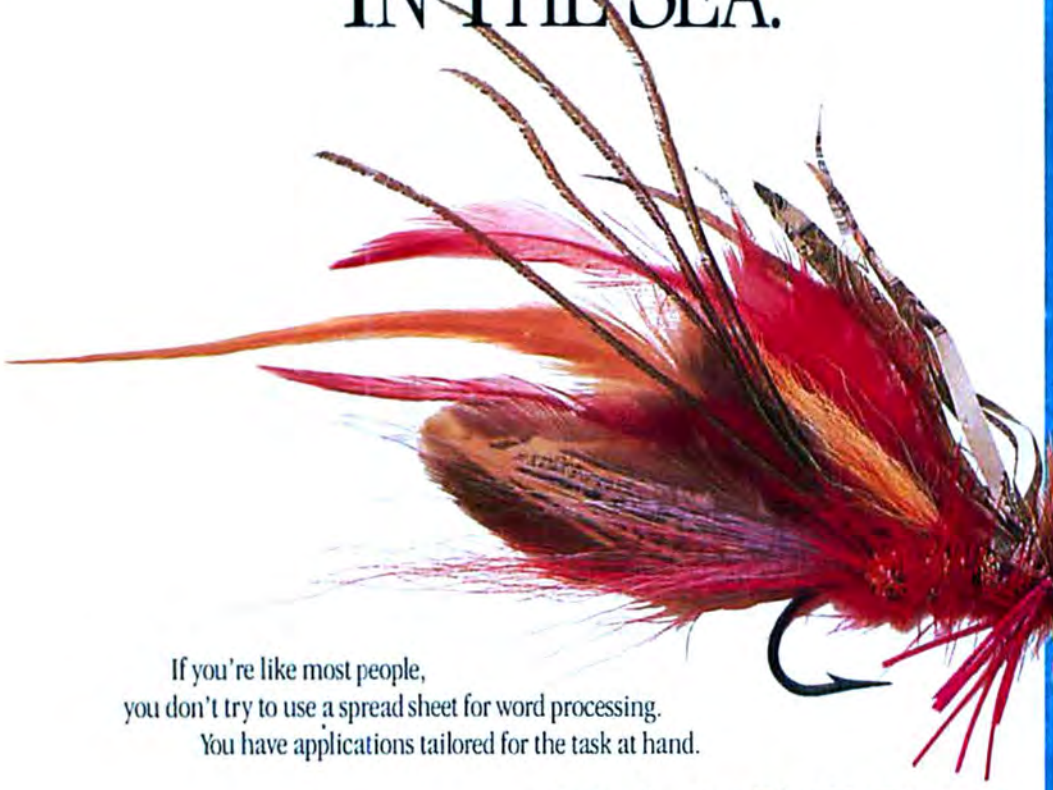
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by Michael Swaine

Desperately Seeking Scripts

Until recently, the only people who could program on the Macintosh were professional programmers and people with infinite free time. If you owned anything but a Mac, you could write macros or batch files or short BASIC programs to get things done, but the word was that programming on the Mac was too complex for anyone whose business was not software development.

Well, the Mac *is* too hard to program on your coffee break. But Bill Atkinson wrote *HyperCard,* and Dan Winkler wrote a language that lets you program *that*.

The result is that someone who isn't a professional programmer finally has the ability to create his or her own solutions. When some professional or personal need sends you to the last card of the Home Stack to set your user level to scripting, you now have access to HyperTalk.

It's about time, if you ask me. The mainstream of personal computing has always offered the user the option of building software rather than buying it, and it's nice to see Apple bringing the Mac into the mainstream.

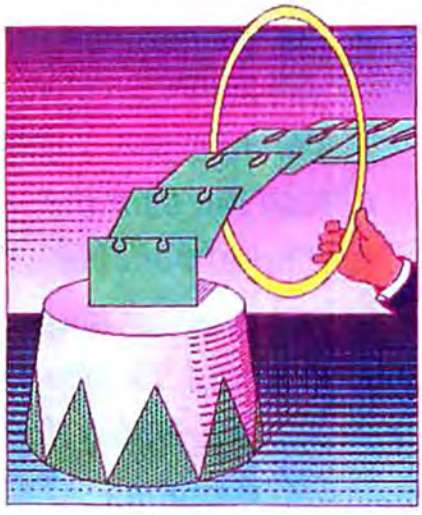
Welcome, Apple. Seriously.

YOU ARE NOW ENTERING HYPERTALK

This is a column about programming in Apple's programming language for the rest of us, HyperTalk. Although no magazine column can substitute for a good manual and lots of hands-on experience, I hope to supply some tools of use to beginning programmers, and to discuss the tools in ways useful to more advanced programmers.

Here at the beginning, let's start at the beginning. If HyperTalk is a programming language, where are the HyperTalk programs?

It's not a proper question, but it points to a proper problem. Formally, a programmer talks about the scripts, not the program, in the HyperTalk patois. The code resides in scripts, and the scripts reside all over the place. What corresponds to a program in BASIC, for example, exists in *HyperCard* as a dispersed functionality.



Swell, but one of the things that should make it easy to learn to program in HyperTalk is the ability to examine others' code. Because HyperTalk is an interpreted language, you acquire the source code with any stack you acquire. Public domain stacks, shareware, commercial products, and Apple-supplied stacks are all there for you to examine. But when you're trying to learn scripting by example, the last thing you need is a dispersed functionality.

I suggest a thought experiment.

Imagine yourself examining the program behind that most familiar of all *HyperCard* objects, the Home Stack. You select Stack Info from the Objects menu while in the Home Stack, and you learn that this stack contains two backgrounds and five cards. Stacks and backgrounds and cards are all objects, as are buttons and fields. And scripts are associated with objects: every card, every background, every field, every button, even the stack itself, can have a script associated with it. Go ahead, just have a look at the scripts. I'll wait.

The Home Stack contains, in all, 37 scripts. That's where its program is. Not counting the time required to read the scripts, just getting to every script in the Home Stack would take — oh, back already? You see why I suggested you do this as a thought experiment.

It's no wonder that one of the first tasks stackware developers set themselves was to automate the extraction of scripts. There are now several shareware and commercial products that do this, and you'll find at the end of this column a script that extracts scripts.

If that were all there is to understanding the why-it-does-what-it-does of a stack, which I refer to as its program, we could end the column here. Just looking at the scripts, though, won't teach you how to program in HyperTalk. A *HyperCard* stack is a structured set of objects that respond to messages that enter and trickle through the stack. To understand the program behind a stack, you need to understand the flow of its messages.

MESSAGES FLOW DOWNSTREAM

Messages come trickling through the stack. They are generated, for example, when you do something to the machine, such as moving the mouse. A HyperTalk script is essentially a collection of handlers of these messages, and a message handler is just a series of HyperTalk commands associated with a message. Whenever the handler receives its message, it performs its commands. Some common messages are mouseDown and mouseUp, generated by clicking the mouse button; and openCard, which is generated when you move to a new card within *HyperCard*. The series of commands performed when the handler receives the message can be extensive.

Clicking the mouse while the cursor is over a *HyperCard* button will generate a mouseUp message (also a mouseDown message), but will have no effect on the *HyperCard* button unless the button's script includes a handler for this message. But how

JIM LUDTKE

does the button know that the mouse click is intended for it? How does any object know that it is supposed to respond to certain messages and not to others?

For common events like clicking the mouse, *HyperCard* makes some natural assumptions. When you click the mouse over a button, it is reasonable to assume that you want to activate the script of the button, and that's what *HyperCard* does assume; it directs such a mouse message to the button's script. The button is called the mouse message's entry point. Similarly, the entry point for an openCard message is the current card. When you open a card, the message generated goes directly to the card's script.

The fact that a message has an entry point does not guarantee that it will be handled by the script of that object. If the script doesn't have a handler for the message, the message will fall through the object to the next object in the object hierarchy.

The object hierarchy is the next concept to master in understanding the flow of messages. A general object hierarchy is built into *HyperCard*, although every stack has its own structure, built in accordance with this hierarchy. In any *HyperCard* stack, a button or a field belongs to either a card or a background. A card in turn belongs to one background, and a background to one stack. A message can fall through a card button or card field to its owner card, or through a background button or background field to its owner background. From there it can trickle through the levels, down to the stack or even beyond it to the Home Stack or to the *HyperCard* program itself. A message will trickle through the hierarchy in this way until it finds a handler or reaches bottom.

Clearly, it can make a difference whether, say, a button is a background button or a card button: only in the latter case can a message fall through the button to the card. So although the general object hierarchy is fixed, what really determines the flow of messages is the structure of the particular stack under examination.

Once a message finds a handler, that's normally the end of it. It is possible, though, to override this normal behavior of *HyperCard* by passing the message. In this case, the message is intercepted by the handler of some object, which takes some action as a result of receiving the message, but the message is then allowed to continue through the object hierarchy to the next object, as though it had not been intercepted. The script for the Home Card handles the message startUp, but it also passes start-

The mainstream of personal computing has always offered the user the option of building software rather than buying it, and it's nice to see Apple bringing the Mac into the mainstream.

Up on to the Home Stack, which in turn handles it and passes it on to other possible handlers.

This passing of messages subverts the normal behavior of message handlers, but it still follows the object hierarchy. You can also subvert the hierarchy by explicitly sending a message to an object.

To understand the program of a stack, you need to know four things:

- the entry points for messages that represent input (mouse actions, keyboard activity, etc.);
- the object hierarchy of the stack (how the messages normally trickle through the stack);
- which messages are in fact intercepted by the scripts of each of the objects in the stack, plus any deviations from the normal flow; and
- what commands the objects' handlers will perform on receipt of the messages, that is, the contents of all the scripts.

The first of these is generally obvious. The second I arbitrarily call "stack mapping"; the third, "message tracking," and the last, "script extraction." The last three of these together I call "stack analysis," and that's what this month's script does.

STACKIAN ANALYSIS

It's called *Stack Analyzer*, and you may find it useful in examining your own stacks, Apple-supplied stacks, and freeware and shareware stacks. The first time I used it, it discovered a phantom button in Apple's Address stack. This information was as useless to me as the button; but had it been my own stack, I would have been glad to find this error before sharing the stack with others.

As I have implemented it here at the beach, *Stack Analyzer* resides in a stack named "MacUser." This stack contains one background and one card. The background, also named "MacUser," contains two buttons, "home" and "back," each with a script. The card, named "May 1988," contains one field and three buttons. The card field is named "display," and the card buttons are named "format," "edit," and "analyze." The buttons are triggered by mouseUp messages, and the "analyze" button responds to some custom messages. You may implement it differently.

One way to use *Stack Analyzer* is to run it first with message tracking and script extraction disabled, producing a brief map of the structure of the stack (basically, the information in the last paragraph, which I edited from the actual output of *Stack Analyzer*). This will show you the hierarchy of objects through which messages can pass. Then run it with message tracking enabled, to see what messages are handled by the objects, and whether there are any deviations from normal flow. Finally, run it with message tracking off and script extraction on, to see what the handlers actually do in response to the messages they handle: to study the scripts.

If you're a beginning scripter, I



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Phone books, shoe boxes, and other creative ideas have been tried to bring the Mac up to eye level, but with little success.



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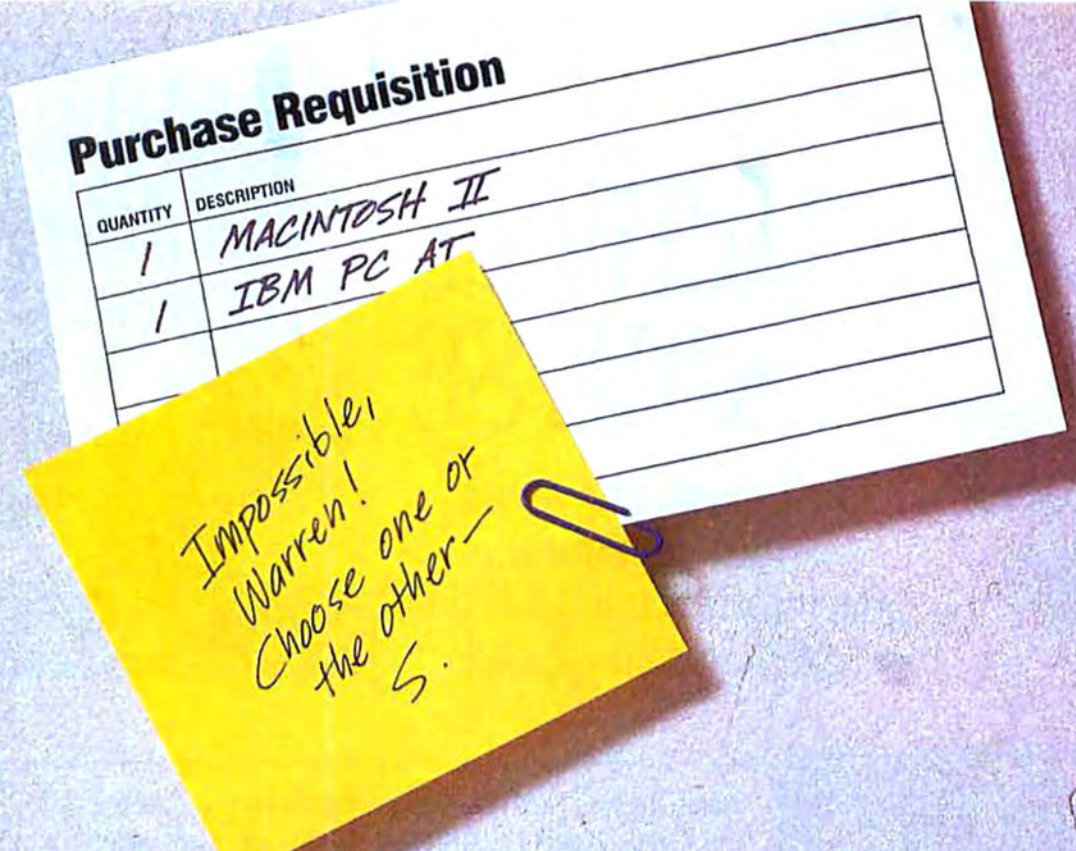
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The obvious solution was unrealistic.

"I would have given up anything to use a Macintosh, except my PC software."

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People say, "Where there's a will, there's Warren." Which means I don't settle for words like No. Impossible. Can't be done. No way.

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The fastest fix was to buy both an IBM® PC and a Macintosh. "Not possible," said the DP/MIS manager. "Pick one. Any one you want, as long as it's MS-DOS® compatible." Witty guy.

Then I searched everywhere for someone willing to loan me a PC in exchange for executive privileges. I was willing to give up anything, but I kept hearing No. Not interested.

Without another alternative in sight, I decided to surrender and settle for a PC. Then, I discovered an article on AST's newest products—MS-DOS co-processors for the Macintosh II and Macintosh SE. The cavalry had arrived.

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The article said AST's Mac86™ and Mac286™ allow you to actually run MS-DOS application programs on your Macintosh. Just plug the DOS processor into your Macintosh II—Mac86 into an SE—and load your favorite MS-DOS application software onto the Mac's hard disk. I was sold.

MS-DOS on my Mac looked and felt just like all my other Mac applications—great. I just pointed and clicked. The MS-DOS prompt I know and love appeared in a window on my screen. From there on, I used MS-DOS programs and commands as if I were working on a PC.



I would have traded anything for the best of both IBM and Mac worlds.

I even moved Macintosh files into MS-DOS, sometimes cutting and pasting parts from one environment to the other. And when I was finished with my PC and Macintosh files, I stored them both on the same Macintosh hard disk without any clumsy file transfer procedures to slow me down.

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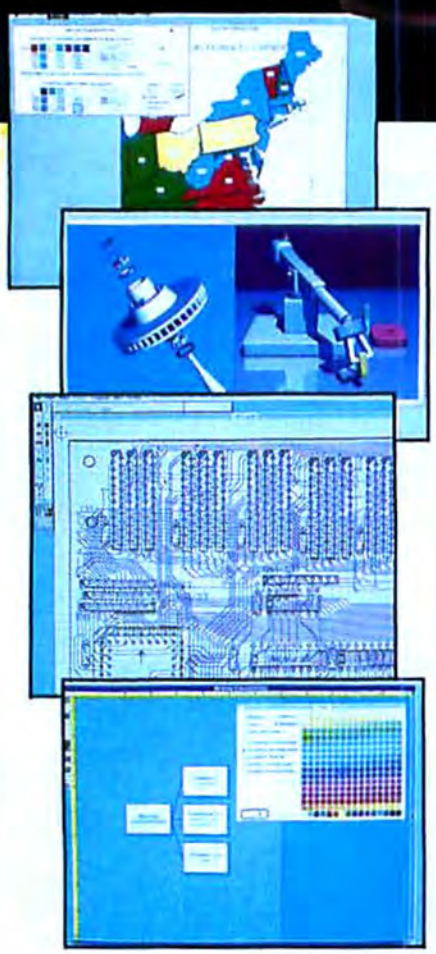
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suggest you create a one-card stack, add a scrolling card field and a card button, and type in *Stack Analyzer* as the button's script. Use it as a tool and don't worry about how it does its job — yet.

If you're past the beginner stage but want to learn more about message handlers and recursion, the remainder of this column will discuss the program *Stack Analyzer*.

ANALYSIS AND YOUR STACKS

The *Stack Analyzer* script consists of three message handlers. The first message the script responds to is mouseUp. The mouseUp handler prompts the user for some information, does a bit of initialization (some of it via messaging the handler setLocks), then generates the message "analyze theStack, 0", which will be intercepted by the handler "analyze."

This business of one handler messaging another may look a lot like calling a procedure or subroutine in a procedural language, but you should note that the analyze handler is entirely external to the mouseUp handler. It could, in principle, reside elsewhere, and there could be different analyze handlers in, say, the card and stack scripts. *HyperCard* itself, XCMD external commands, and the operating system are potential message recipients. If more than one handler for a message exists, the response to the message would be different depending on what object received it.

Stack Analyzer does not exactly pass any messages, but it reports if the scripts it analyzes do. It is possible, though, for a script to pass its message to itself. This curious behavior is called recursion. If a handler generates the message by which it was invoked, the message is guaranteed to go to the handler itself, even if there are other handlers with the same name. The analyze handler in my script sends its message to itself recursively.

The initial analyze message from the mouseUp handler causes the analyze handler to analyze the stack. This means that it reports the stack name, the messages handled by its script, if any, and the number and names of its chief constituents (backgrounds and cards). Then it sends out messages that the backgrounds and cards need to be analyzed. For each background or card, the analyze handler (recursively invoked) now reports its name, the messages handled by its script, if any, and the number and names of its chief constituents (fields and buttons). (Stop me if you've heard this before.) Then it sends out messages that these constituents in turn need to be analyzed. The analyze handler looks at each of the constituents, and since fields and buttons contain no constituents, it finally stops generating analyze messages.

One way to use Stack Analyzer is to run it first with message tracking and script extraction disabled, producing a brief map of the structure of the stack.

There are good reasons for using recursion. My analyze handler is concise and makes use of the hierarchical structure of *HyperCard* stacks. But there are also good reasons not to use recursion in HyperTalk. Recursion is never necessary, is generally slow, and HyperTalk does not support recursion to hundreds of levels. Frankly, I used it here because I'm comfortable with it, it kept the listing short, and it gave me the opportunity to introduce others to the technique.

WARNING! WARNING!

A caveat: *Stack Analyzer* could be improved: for example, some kinds of deviations from normal message flow will get past it. Nevertheless, it should serve its intended purpose of



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allowing you to explore why a stack does what it does.

Some programming tips: When requesting input from the user, supply a good default response; I think my defaults for message tracking and script extraction are the right choices for first-pass analysis. I implemented handler setLocks the way I did because this ensures something important: that whatever gets locked gets unlocked, whatever gets changed gets put back. That's an easy thing to forget, particularly on the seventh edit. In this program I use the DO command to build a *HyperCard* command on the fly. Whatever string you supply to DO will be interpreted as a HyperTalk command and executed. I find it a very useful tool, but it doesn't exactly produce lucid code. Use it sparingly. When using recursion, it is not standard practice to pass the recursion level as a parameter (as I did with lev).

A word about the code: I'll generally give you a script(s) and anything necessary to use it; I won't give you full stack specifications, such as object property information. Why should I have all the fun?

I LOVE A MYSTERY

Finally, I'll leave you with a puzzle.

Script extraction will show you every line of HyperTalk code your stack executes, and stack mapping and message tracking will show you how the scripts interrelate. Unfortunately, there are stacks for which these techniques won't find the program. Run my script on Dan Winkler's HyperCalc stack (supplied with *HyperCard*) and consider the output. HyperCalc is a mini-spreadsheet: it allows you to enter values and formulas into cells, it recalculates the contents of cells based on the values in other cells, and it will let you add more cells without scripting. It's not *Excel*, but 19 lines of code??

There are no deviations from normal message flow, and all the HyperTalk code is in those 19 lines of scripts. So where does all the work get done? Where is the program called *HyperCalc*?

```
-- Script  Stack Analyzer
-- Author:  Mike Swaine
-- Version: 1.0 2/1/88
-- This script describes the structure of a HyperCard stack.
-- It reports all messages handled by any script in the
-- stack, and any messages passed or sent by the handlers.
-- It lists the scripts, if desired, and tells which buttons
-- and fields belong to which cards and backgrounds.
-- Its intended use is as a learning and debugging tool
-- for present and future HyperCard stack developers.
-- It should be attached to a button on its own card,
-- and it requires one (scrolling) card field for output.
-- Script Stack Analyzer is placed in the public domain
-- and may be used freely.
--
-- This handler is invoked when the mouse is clicked.
-- It prompts the user for some information,
-- performs some setup, then messages another handler
-- to do the real stack analysis.
on mouseUp
  -- Initialization details.
  global userName,showScripts,showEvents,analysis,theScripts
  put empty into card field 1
  put empty into user
  -- Get the name of the stack (politely) from the user.
  if userName is not empty then put ", " &word 1 of userName into user
  ask "Analyze what stack" &user &"?" with the short name of this stack
  -- Proceed only if the user has given you a stack name.
  if it is not empty then
    put it into theStack
    -- Offer choices in the information to be reported.
    answer "Do message tracking?" with "Yes" or "No"
    put (it="Yes") into showEvents
    answer "Do script extraction?" with "Yes" or "No"
    put (it="Yes") into showScripts
    -- The report will be built in a container called analysis.
    -- Start building by putting the report title into analysis.
    if user is not empty then put " for " &userName into user
    put "Analysis of " &theStack &" stack" &user into analysis
    if showEvents or showScripts then put " with" after analysis
    if showEvents then put " message tracking" after analysis
    if showEvents and showScripts then put " and" after analysis
    if showScripts then put " script extraction" after analysis
    put return &return after analysis
    -- Do some initialization, including locking certain global
    -- properties to keep the stack from running away from you.
    setLocks true
    -- Now analyze the stack.
    analyze theStack,0
    -- Now it's safe to unlock what you locked.
    setLocks false
    -- Display the analysis and tidy things up.
    put analysis &theScripts &return &"End of analysis" into card field 1
    put empty into analysis
```



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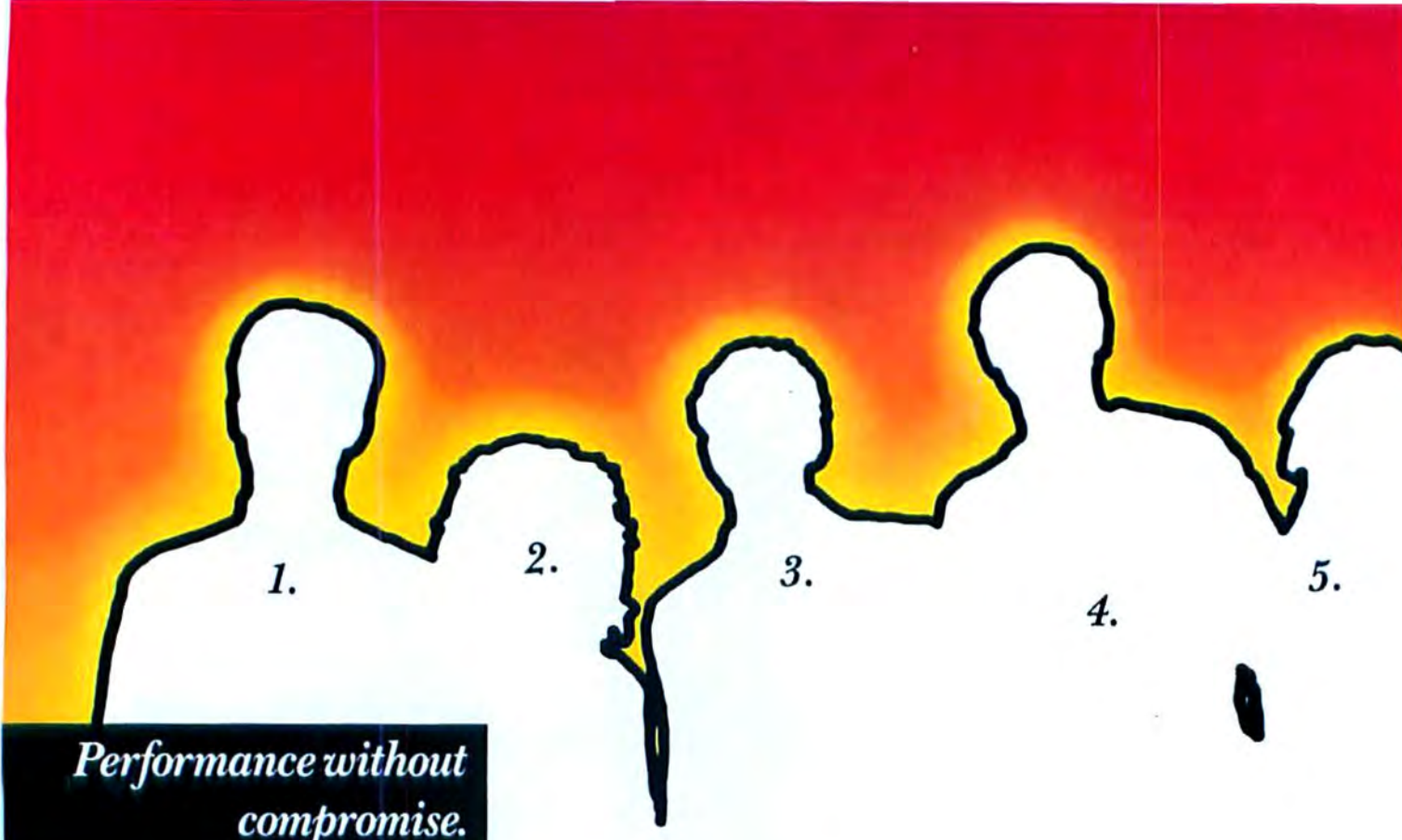
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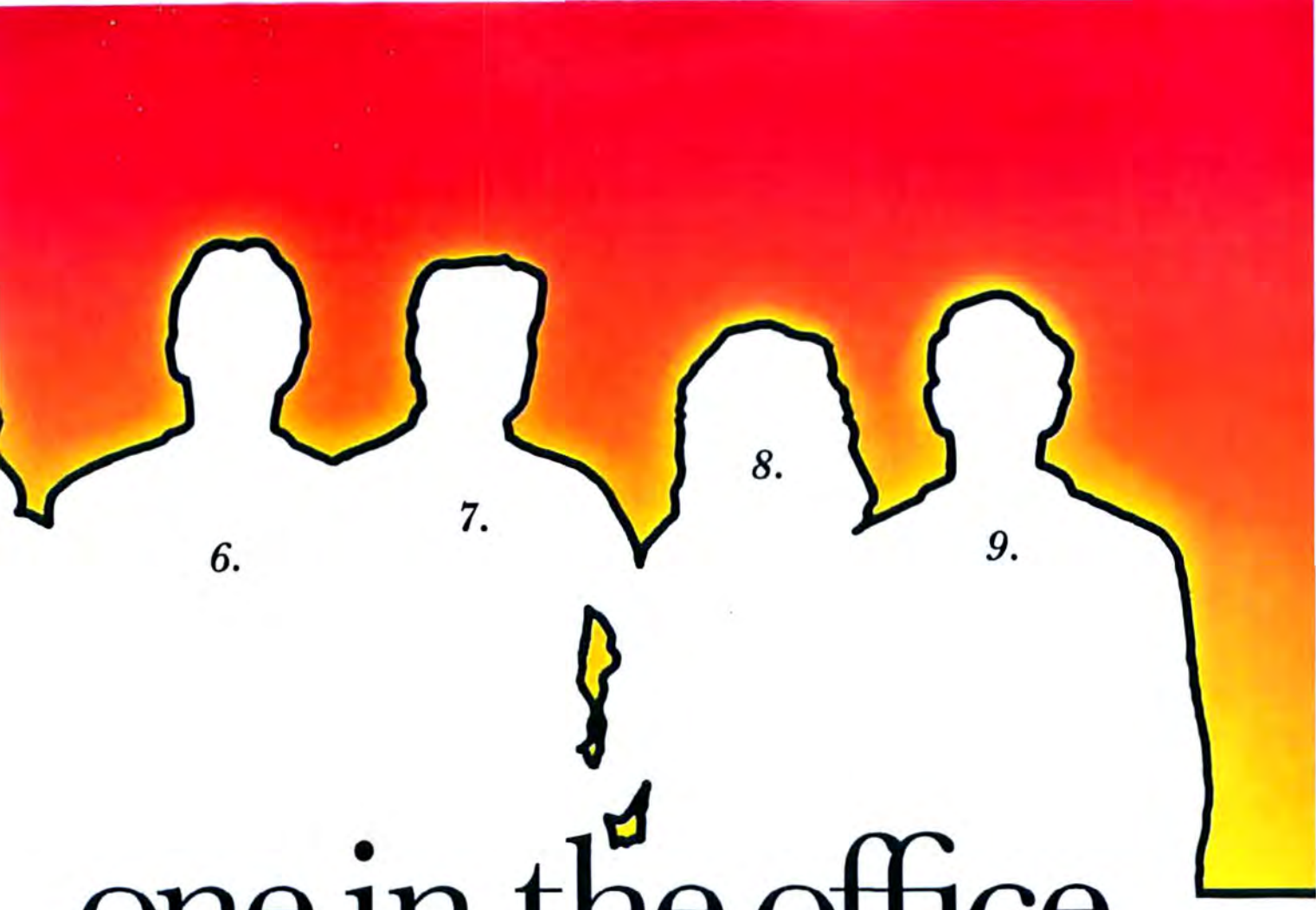
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```
    put empty into theScripts
    hide message box
   end if
  end mouseUp
-
-- This handler is invoked by the message setLocks
-- in handler mouseUp.  It either locks or unlocks certain
-- HyperCard properties, depending on the value of flag.
on setLocks flag
  -- Locking messages, screen, etc. keeps your stack,
  -- rather than the stack being analyzed, in control.
  if flag then set cursor to 4 else pop card
  if flag then set lockScreen to true else¬
  set lockScreen to false
  if flag then set lockMessages to true else¬
  set lockMessages to false
  if flag then set lockRecent to true else¬
  set lockRecent to false
  if flag then push this card else set cursor to 1
end setLocks
-
-- This handler does the analysis.
-- It uses recursion to dig through the stack hierarchy.
-- One invocation of this handler digs one level deep
-- (e.g., looks at the stack but not at its component cards),
-- then it messages itself to look at each component object.
on analyze thing,lev
  -- Analyze something: a stack, background, card, field, or
  -- button; i.e., report its name, the events it handles, and
  -- its components. Then, if it HAS components, analyze them.
  global analysis, showScripts, showEvents, theScripts
  put the name of thing into itsName
  -- Give the user some on-screen feedback.
  put "Now examining " &itsName
  -- Report the object's name.
  put indent(lev) &itsName &return after analysis
  if lev<2 then go to thing
  put word 1 of itsName into object
  -- Determine what kind of components it has.
  if object="stack" then put "bkgnd,card" into sub
  if object="bkgnd" or object="card" then put object ¬
  &" field," &object &" button" into sub
  -- If it's a card, say what background it belongs to.
  if object="card" and lev=1 then
    put indent(lev) &"  of " after analysis
    put the name of this bkgnd &return after analysis
  end if
  -- If the user asked to see scripts, report object's script.
  if showScripts then
    put the script of thing into itsScript
    if itsScript is not empty then
      put return &"Script of " &itsName &return after theScripts
      put itsScript &return after theScripts
    end if
  end if
  -- If the user asked for message tracking, report that.
```

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```
if showEvents then
  put the script of thing into itsScript
  put the number of lines of itsScript into nlines
  if nlines>2 then
    -- This takes time, so tell the user what's happening.
    put "Now examining the script of " &itsName
    put indent(lev) &"- handles these message(s):" &return after analysis
    -- Examine each line of the script.
    repeat with i=1 to nlines
      put line i of itsScript into linei
      put word 1 of linei into word1
      -- The word "on" signals a handler.
      if (word1="on") then put indent(lev) ¬
      &" " &(word 2 of linei) &return after analysis
      -- The words "pass" and "send" signal
      -- deviations from normal message flow.
      if (word1="pass") then put indent(lev) &" (which it passes)" ¬
      &return after analysis
      if (word1="send") then put indent(lev) &" (It sends message " ¬
      &(word 2 of linei) &" to " &(word 4 of linei) &" )" ¬
      &return after analysis
    end repeat
  end if
end if
-- Determine what components the object has, if any.
-- (Stacks have backgrounds & cards, cards have buttons, etc.)
if lev<2 then
  do "put the number of " &(item 1 of sub) &"s into n1"
  do "put the number of " &(item 2 of sub) &"s into n2"
  if n1<>1 then put "s" into s1 else put "" into s1
  if n2<>1 then put "s" into s2 else put "" into s2
  -- Report its components.
  if n1+n2>0 then
    put indent(lev) &" contains " &n1 &" " &(item 1 of sub) after analysis
    put s1 &" and " &n2 &" " &(item 2 of sub) &s2 &return after analysis
    -- Then, for each kind of component...
    repeat with i=1 to 2
      do "put the number of " &(item i of sub) &"s into n"
      -- and for each component of that kind...
      repeat with j=1 to n
        put (item i of sub) &" " &j into m
        -- analyze IT.
        analyze m,lev+1
      end repeat
    end repeat
  end if
end if
end analyze
-
function indent level
  -- This produces a tab for indentation based on recursion level.
  repeat with i=1 to level+1
    put "   " after s
  end repeat
  return(s)
end indent
```

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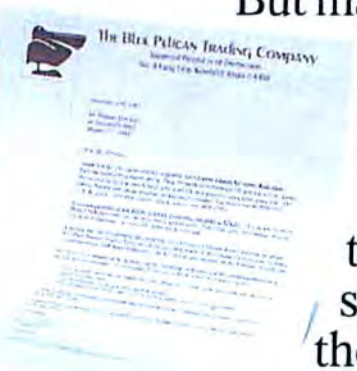
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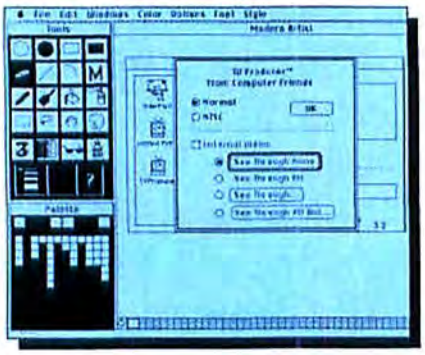
Quick Clicks are short reviews of released products. If it appears here, it is available commercially.

TV PRODUCER ★★★



List Price: $599. Manufactured by Computer Friends, 14250 N.W. Science Park Drive, Portland, OR 97229. (503) 643-2291. Requires Mac II, color monitor, and VCR. Software not copy protected.

The revolution that the Macintosh sparked in publishing may just happen again with video. TV Producer, a Mac II, and a couple of VCRs create a video studio on the desktop. The add-in board lets you lay Macintosh graphics and animation over a video signal, then dump the results back to a video recorder.



TV Producer is a low-end video processor — one of the first in what promises to be a long line for the Mac II. Although you can't alter the video signal itself — say, brighten up a shot when the lighting isn't sufficient — you can overlay titles, bring in an arrow to point out a person in a crowd, or perhaps add an animated character that interacts with live actors.

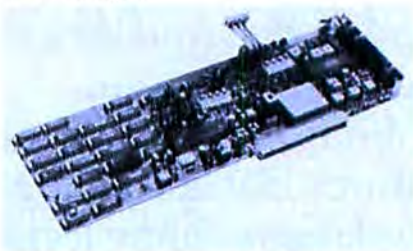
You place the TV Producer board in a slot next to the Apple video card, and a couple of cables mate the pair. RCA-type connectors on the back of the board are the in and out jacks for the video signal. If you want to preserve the output, you need a second VCR to record it; otherwise, just route the output to a composite TV monitor.

You can't view the video on your regular computer monitor because standard TV signals and computer output have different syncs — that is, they display lines at different frequencies. A more expensive version of TV Producer displays video on RGB multisync monitors. (Other configurations include PAL for the British TV standard and a Professional model that delivers a higher quality video.) Even if you don't buy the more expensive RGB board, a multisync RGB monitor is almost a necessity to work productively. With a standard Apple monitor or any of the many analog RGBs, the screen will go fuzzy once you try to mix Mac graphics with video. If you have anything less than a multisync, you'll be working blind.

The TV Producer software driver is installed in the *System,* where it then sets itself up as a selection in the Chooser. On my first few tries, the driver crashed my Mac II consistently — probably because the *System* I used had many odd DAs and inits. A less cluttered *System* corrected the problem.

TV Producer's specialty is chromakey — that is, superimposing a color over a video signal or allowing a video image to show through a color. But what TV Producer offers is really a scaled-down chromakey. You're not working with a particular background color on the video image, just the color on the computer graphic.

TV Producer works in conjunction with graphics applications such as *Pixel Paint* and *Modern Artist* — not surprising because the latter program also comes from Computer Friends. To get a color to appear on top of the video, you just click it. Conversely, you can click on one color and let it "show through" (become invisible), letting all the other colors on the screen appear over the video image.



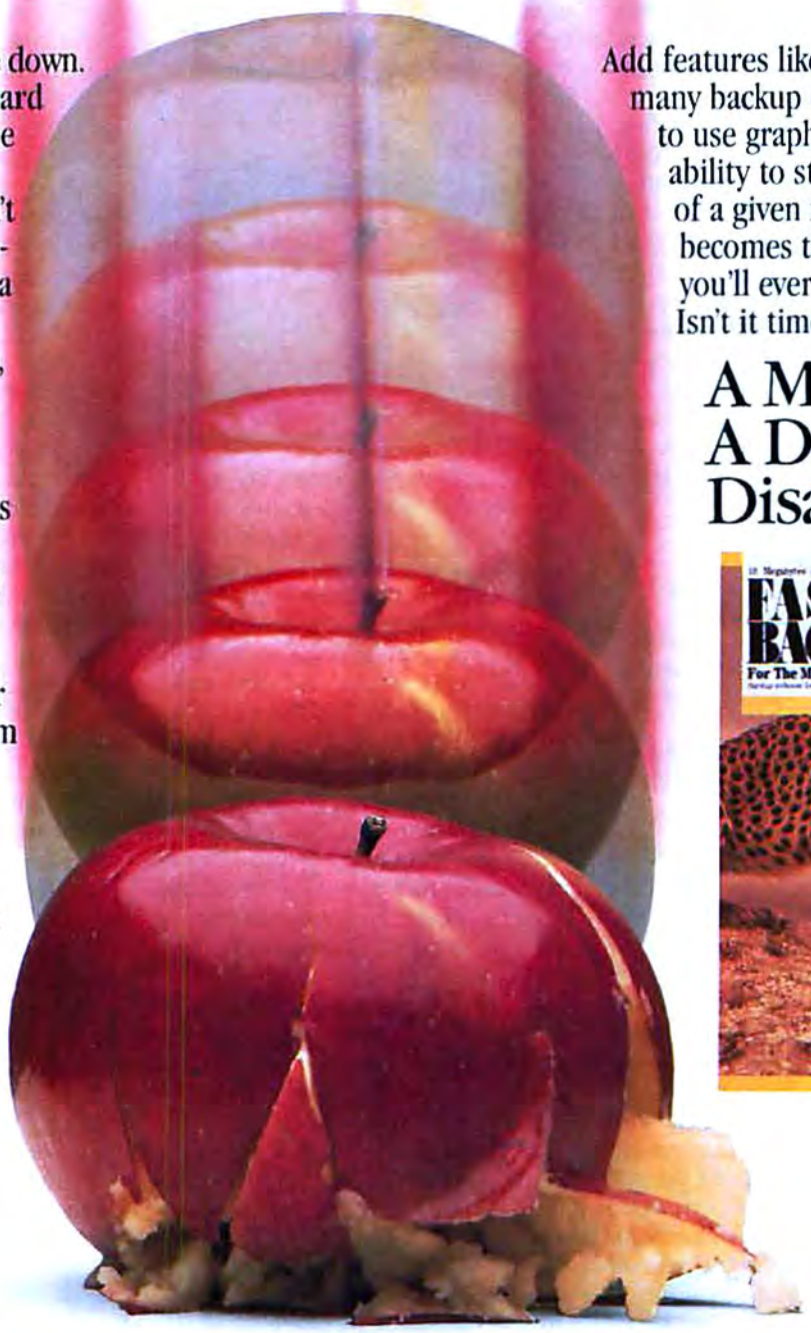
This may not seem like much power at first, but with some advance planning, you can get a lot out of it. The best applications to use with TV Producer are desktop presentation programs, such as *VideoWorks II,* that set a stage for viewing. Because the stage is usually a white background without a menu bar, you can just click on white as the color to show through, and a movie or graphic complete with multiple colors will appear on-screen.

Even with such work-arounds, TV Producer's interface is less than elegant. You have to work through the Chooser to get to the Options menu. A more intuitive interface would have you close the Chooser, then access a desk accessory to select the options. It would certainly make closing the Chooser easier when working blind on a nonmultisync monitor. The software needs to be revved again so that the interface is transparent to the video.

There are other problems with TV Producer. Unless you're comfortable using a soldering iron on a circuit board, you'll need help from a technician to install the board. You have to modify the Apple video card by adding a 14-pin connector — an act that voids your warranty.

Computer Friends deserves a reprimand for the way it engineered this procedure. The 14-pin connector is not speced to fit the video card. It is

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literally a case of trying to fit square pegs into round holes.

But it gets worse. I fried the multicolored ribbon that connects TV Producer with the Apple video card just by inserting the ribbon into the 14-pin connector incorrectly. Fortunately, neither the Mac II nor the video card was damaged. Computer Friends may have saved a little money by using such chintzy connectors, but for $600 or more, consumers deserve better quality materials.

Despite the problems, TV Producer accomplishes what it set out to do — overlay graphics on top of video. It isn't for idle camcorder nuts who just want to put titles over their home videos. The price is too high for that — especially considering the cost of extra monitors. But for industrial videos, training tapes, and company presentations, it can make the difference between an amateur production and a professional look.

— *Ben Templin*

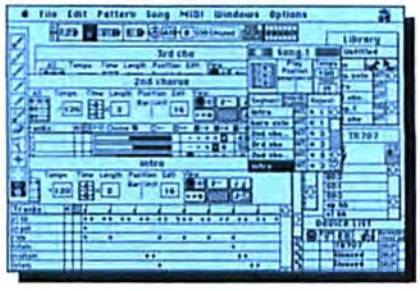
UPBEAT ★★★½



List price: $150. Published by Intelligent Music, PO Box 8748, Albany, NY 12208. (518) 434-4110. Requires 512K+. Version 1.2 reviewed. Copy protected.

Long before there were MIDI sequencers, there were drum machines. You got a drum machine to play what you wanted by programming short patterns and combining these to form song-length rhythm tracks. Drum programming is a task many musicians have learned, but few enjoy. It's a tedious chore involving lots of counting, figuring, dealing with multipurpose buttons, running up against memory ceilings, and general hair-pulling. When MIDI-controlled drum machines and powerful computer-based sequencers appeared on the market, many musicians gratefully let the sequencers, with their advanced editing capabilities, take over.

The art of drum programming has not been lost, however, and Intelligent Music, maker of *M* and *Jam Factory*, has brought it into the modern world with *UpBeat*, which it's billing as "the smart rhythm programmer." *UpBeat* turns the Macintosh into a front panel for a highly complex and versatile drum machine, letting you input patterns and songs with the mouse, the Mac keyboard, and, if you like, a MIDI keyboard. Through MIDI, the program controls any drum machine you like, or several machines at once, or even keyboard synthesizers.



UpBeat uses the pattern/song conventions of traditional drum machines, except the number of patterns and songs you have available is virtually unlimited. Each pattern can have its own length, tempo, time signature, and even its own set of individual instruments. For example, you can instantly go from a cool jazzy 5/4 pattern at 90 beats per minute to a roaring Latin percussion orchestra at 144 beats per minute in 9/8 time without, literally, missing a beat. Not only can songs be built out of patterns, they can also be built out of other songs, so the flexibility for putting together compositions is enormous.

Patterns in *UpBeat* are displayed and edited visually. Each percussion instrument gets its own visual track, and each track is assigned a particular MIDI note (or combination of notes) so that it triggers a specific sound on a drum machine. You can draw in notes, or "strikes," to instantly hear how they relate to the rest of the pattern. Resolution of the patterns can be set anywhere from 2 to 384 parts per measure. You can use different resolutions on different tracks, so that complex polyrhythms are easy to create. You can slide individual tracks back and forth in time to create different types of rhythmic grooves — for example, making a snare drum backbeat slightly late can give a track a more "Motown" feel, while moving it forward creates a "driving" feel. You have complete control over the velocity, or loudness, of each strike. If you are using synthesizers, you can also control note durations (drum machines usually ignore durations).

Cutting, copying, and pasting capabilities let you move tracks around, both within and between patterns, and there is a particularly neat function called FIT PASTE, which creates a rhythmic pattern a certain number of beats long and then squeezes or expands it to fill a different length.

Two features that clearly put *UpBeat* light-years ahead of any drum machine are its "jamming" and "filling" capabilities. The jamming feature lets you play along "live" with a running pattern. For example, you can instantly add a few snare drum hits to a rock rhythm. Or you can take a hi-hat pattern you've already recorded and have it play temporarily from a tom-tom. The "fill" feature is more complex. It generates random notes on one or more tracks, and the user controls which drum or drums will play the fills, as well as the speed, rhythm, and volume of the fills.

The program deals with probabilities of notes occurring, rather than completely predictable events. Probability factors can also be applied to the patterns themselves — rather than specifying a particular velocity for a note, you can assign it a range of velocities. You can also set note density, which determines how many of the notes on a track will actually sound. These features and the fill function can be instantly enabled and disabled with a "smart" icon — a picture of a light bulb. So a pattern can be rolling along very nicely, and then by turning on the icon, all hell breaks loose.

All of this would be a lot of fun, but not much else, if *UpBeat* could only operate on its own. Fortunately, the program lets you transfer its

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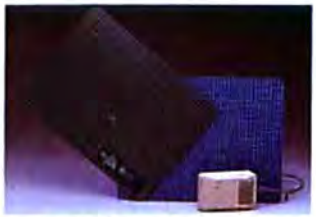
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output to other programs. When you turn on a "movie" icon, all of the MIDI data generated by the program as it plays — the songs, patterns, fills, and jams — gets stored as a MIDI file. MIDI files are an emerging standard for exchanging MIDI data between various types of programs, so a file created by *UpBeat* can be moved into a sequencing program, such as Passport Designs' *Master Tracks Pro,* where it can serve as a drum track to accompany a fully orchestrated song. Both of these programs are now compatible with *MultiFinder.* While there is as yet no way to have them both sending MIDI data out at the same time (although that would be a next logical step), going back and forth between them is a breeze.

For all its merits, *UpBeat* has a few problems. There is no UNDO command, so you have to be very careful about cutting and pasting. Under some conditions, the MIDI file it creates doesn't go into a sequence absolutely accurately; it has to be quantized after you get it in. This may be as much a result of different manufacturers' varying interpretations of the MIDI file spec as it is Intelligent Music's fault.

Setting up the program so that it works with a specific drum machine — that is, assigning all the right MIDI notes to the various tracks — is by far the most difficult aspect of the program, and it is, unfortunately, the one that has to be tackled first. There are some aspects of it, particularly when you are changing drum machines, that don't seem to make any sense no matter how hard I study the manual. It would be a big help if Intelligent Music included on the program disk "templates" for popular drum machines.

The manual is brief, but it contains almost all of the necessary information and is actually indexed. However, it is very badly edited, and the tutorial that opens the manual is confusing. You'd be better off skipping it. Just go to the reference chapters while feeling your way around the program.

Problems aside, *UpBeat* is a wonderful tool for musicians who are serious about rhythm. Some of the music industry's hottest professional drum programmers (who used to be known as session drummers) already swear by it, and you've probably heard it on some recent Top 40 hits. Used in conjunction with a good sequencer, it can go far towards making drum tracks more interesting and human-sounding. It's much easier to use than Intelligent Music's previous programs and can be immediately useful for a greater number of musicians as well.

Although its performance deserves a 4½ mouse rating, it loses a mouse because of its copy protection.

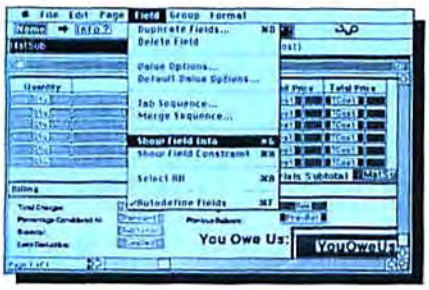
— *Paul D. Lehrman*

TRUEFORM ★★★★½



List price: $495; runtime version, $295. Published by Spectrum Digital Systems, 2702 International Lane, Suite 112, Madison, WI 53704-3122. (608) 244-4300. Requires external 800K disk drive. Version 1.0 reviewed. Not copy protected.

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When you first look at the scanned form on the computer you may think the image quality is unacceptable. But *TrueForm* saves two pictures of each form — one at 72 dpi for the computer screen, another at 300 dpi for a laser printer. The resolution of the form on the screen is sufficient to see where to place the data, but the resolution for the laser printer produces a document nearly indistinguishable from a photocopy.

TrueForm consists of two programs: Set-up and Fill-out. Set-up allows you to scan a form using six popular scanners. It also imports PICT, TIFF, or *MacPaint* files. You then teach the computer how to fill out the form by clicking those areas where you want fields. The program magically figures out the field boarders, how to format the data, and in what order you want the fields filled. You can customize the form by adding instructions that are displayed when you move into a field. You can specify formulas or default values, and add constraints to check the validity of the data to ensure that a form is filled out correctly.

TrueForm has a number of format options. You can select predefined formats for numeric, Date/Time, and check item values, or you can define your own formats. *TrueForm* lets you select multiple fields and act on them as a unit. For example, you can move the selected fields as a unit and/or set the type style for the group. Another feature lets you unite a group of fields and treat them as a single entity for duplicating, summing, decimal point alignment, and so on.

The Fill-out program lets you enter data into the master form that you produced with the Set-up program. You can enter data from the keyboard or import data from text files generated by a spreadsheet, database, fax, terminal, or mainframe. (Spectrum claims that future versions will allow you to interface directly with databases such as *4th Dimension.*)

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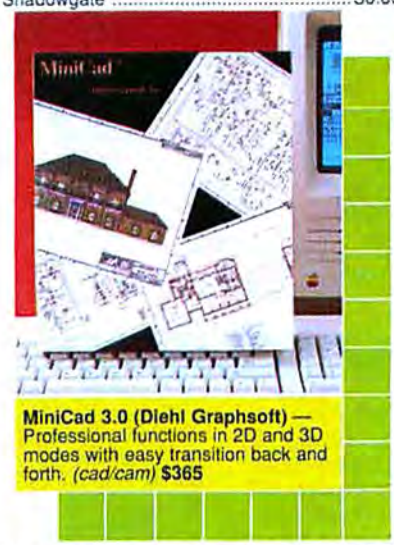


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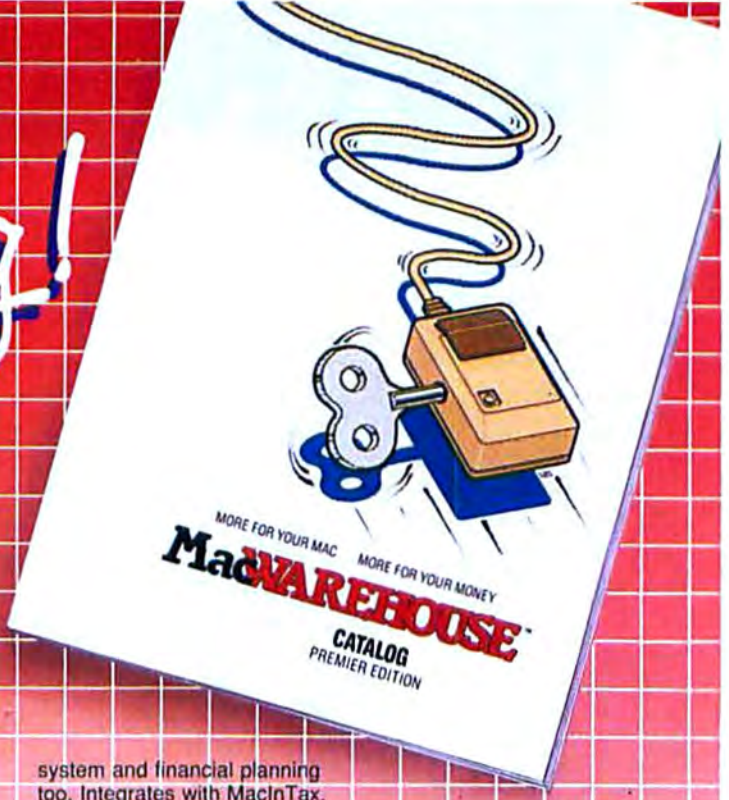
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QUICK CLICKS

Spectrum, and for $20 a page, they'll scan it and send you back an image on a disk. Or you can design your own clean-looking form with *MacDraw* or even *MacPaint,* and import that image into the Set-up program.

TrueForm exports your forms onto paper as quickly and conveniently as it imports them into the Mac environment. You can easily print onto your old paper forms because the accurate electronic image lets you align the data within the fields. It can take two to three minutes to load an image into a LaserWriter, so *TrueForm* provides a Form Caching capability; the image of the form is sent to the LaserWriter once, then subsequent pages are printed at a rate of about four to five forms per minute. The folks at Spectrum also built in a fudge factor for printer alignment, an offset factor for the starting position of data at the top left corner, and a scaling factor that stretches or shrinks the placement of the data from the starting position.

I scanned and set up our company expense report, and *TrueForm* did a great job. The only problem is that our form is two-sided; one side is oriented vertically, the other horizontally. *TrueForm* handles multiple page forms, but all pages must be the same orientation. Also, after using spreadsheets for so long, *TrueForm*'s method of summing threw me, but it still worked. I only wish the automatic recalculation could be turned off. It's so slow, I could enter the data quicker. Still, the wait is worth the results.

Bureaucrats, the line forms to the right.

— *Chip Carman*

LASERTALK ★★★★½



List Price: $249. Published by Emerald City Software, PO Box 2103, Menlo Park, CA 94026. (415) 368-8303. Requires 1M+ and a PostScript printer. Version 1.0 reviewed. Copy protected (registered users receive an unprotected version).

PostScript has remained for most people that mysterious "something" in a laser printer that may or may not be hardware, software, or even a bizarre high-tech hybrid of the two. And as most fledgling PostScript hackers know all too well, this state of ignorance has been painfully mirrored by an almost complete lack of tools for PostScript programming.



Unlike established programming languages, PostScript has often been relegated to the backstage, hidden behind the curtains. It's possible to dawdle with it in *JustText, Cricket Draw,* and *Adobe Illustrator,* but without the benefit of any of the usual debugging features of traditional programming languages.

Lasertalk (from the delightfully named Emerald City Software) has changed all that. *Lasertalk* is *not* just another collection of PostScript special effects for desktop publishers, like *Laser F/X* or *LaserCraft* (see *MacUser,* January '88, "Well, Isn't That Special?"), but a real powerful PostScript programming tool.

Lasertalk provides just about everything a PostScript programmer could want, and it does it simply and ingeniously. Upon start-up, it establishes interactive contact with the PostScript Executive or interpreter resident in a PostScript printer (such as the LaserWriter) via AppleTalk. Users can then "converse" with the printer directly — examining PostScript stacks, dictionaries, and the current status of the printer; as well as downloading files in batch mode or line by line. Although *Lasertalk* can be used off-line and includes a first-rate text editor, to take advantage of all its features, you should be connected to a running printer.

Lasertalk's initial window is the



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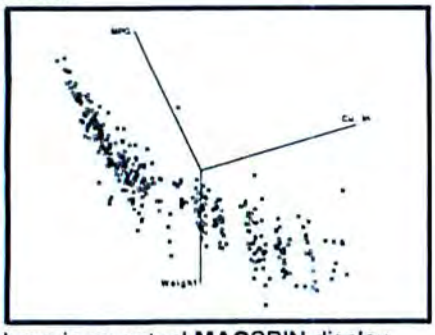
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QUICK CLICKS



interactive window (accessible only when you're on-line with a PostScript printer). Here you'll be met with information about the version of PostScript ensconced in your printer and the prompt PS>, where you can begin to enter PostScript code. Code typed in here is immediately sent to the printer, and you receive feedback from the PostScript Executive as to errors, if any.

The Status window reviews the current state of your printer and various aspects of the PostScript environment such as line width, currentpoint, gray level — in fact, just about anything you want it to, since you can easily customize the Status window during any work session.

The Edit window is where you enter PostScript code (or open a PostScript program generated by another application such as *Adobe Illustrator*) for examination and remarkably easy debugging. A file placed here can be downloaded in its entirety while on-line, "stepped through" line by line, or even downloaded in parts by establishing "break points" in the file where *Lasertalk* stops the download until you tell it to continue. During all this, you constantly receive updates via the Status window or by on-screen alerts that inform you of problems and PostScript errors. The Status window also provides an excellent way to learn and understand PostScript, since you can view how each line or block of your input affects the order of stacks within the PostScript interpreter.

Good Search, Find, and Replace features are accessible from menus and the keyboard. You can select individual words, whether "keys," operators, etc., in any window and then search for them in the PostScript dictionaries and stacks by using the Dictionary Browser or by pressing COMMAND-L (for "lookup"). *Lasertalk* then searches for the selected item throughout all PostScript stacks and displays the definition. You can also select words within a definition and look them up. By choosing DOCUMENTATION SEARCH from the Search menu, you can view the relevant material from Addison-Wesley's *PostScript Language Reference Manual* for any selected word. It's the best on-line help imaginable for PostScript programming.

Lasertalk really shines once a program is ready to run. Unlike *PostHaste*, the only other program out there for serious PostScript programming, *Lasertalk* lets you preview your output on-screen before printing. It does this by reproducing the contents of the raster memory of your printer at a 4-to-1 ratio that guarantees an excellent image on the screen, albeit at four times the size of the original. The software provides some quick-and-easy two-digit commands that you can type in the Interactive window to reduce the image so that you can see more of the page. The Preview window has rulers at the top and left side of the screen that give you the proper PostScript x and y coordinates of the portion of the page in the window at any one time.

The manual, although plagued by "printer's goblins," is excellent (it's written by David Holzgang, author of *Understanding PostScript*). The two-disk set includes a considerable amount of PostScript artwork and Cookbook examples from Addison-Wesley.

If you can afford it, are interested, or have some foundation in PostScript and own a PostScript printer, buy this program. It can't be beat.

— Gregory Wasson

ALPHABET BLOCKS ★★★★★



List Price: $49.95.
Published by Bright Star Technology, 1003 111th Avenue, Bellevue, WA 98004. (206) 451-3697.
Requires 1M+.
Version 1.0 reviewed. Not copy protected.

Alphabet Blocks is a set of two disks for pre-readers; the programs are identical except that one works with letter names, while the other works with letter sounds. The good news is that *Alphabet Blocks* takes a very sound educational approach to its two games — there's obviously a professional behind the scenes. The

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even better news is that the learning doesn't get in the way of the game.

But, there is bad news: *Alphabet Blocks* won't run with less than a megabyte of memory.

The *Alphabet Blocks* screen shows a pile of (what else?) blocks labeled with the letters of the alphabet. There's a somewhat homely elf in the upper corner of the screen; he's the one who interacts with the child during the course of the game. The animation in this program is very careful: the elf turns sideways when he (she?) speaks, and the lip movements are slightly exaggerated versions of the real movement for each letter.



The game is entirely modeless (that's a compliment). If you click on a letter block, the letter is outlined on the block, the elf pronounces it, and an illustrative picture appears. Pressing a key on the keyboard also elicits the same response. If you click on the elf, he'll say a letter (or a letter sound if that's the program you're in), and you have to click on the corresponding letter block. Enough wrong clicks and some of the blocks disappear, leaving a smaller group from which to choose. The program keeps track of which letters get the most wrong responses, and selects that letter more often for practice.

There's lots of attention to detail in these programs: the elf, for instance, falls asleep if nothing's been happening for a while. A simple mouse click wakes him up. (The documentation insists that he'll never wake up grumpy.)

Clicking on the toy soldier changes him from a standing to a sitting position, and changes the letters from upper to lower case. Clicking on the light bulb that hangs over the blocks turns it on and off and highlights each of the blocks in turn while the letters are pronounced.

The sound in these programs is no robotic *Macintalk* — this is a pleasant, clear, digitized voice enunciating each letter and sound perfectly. No doubt that's what forces this preschooler program into the realm of mega-memory.

Alphabet Blocks comes with a booklet of letters and pictures. Each of the letter pairs (upper and lower case) is printed on its own page, with its corresponding picture on the facing page. The letters themselves are composed of miniature raised letters. Research in pre-reading skills has shown that the more senses that are involved in learning, the better. This booklet provides tactile information as the child fingers the letter outlines. I'm not sure I understand or agree with the decision to make the upper case letter on each page out of miniature lower case letters, and vice versa.

Alphabet Blocks is a smooth and educationally sound set of programs. Even a very young child needs little or no guidance in its use. At $49.95, it's a good buy if you already have the right hardware. If you're in my situation, though, it could be a very expensive package: I'd have to upgrade the memory of my sons' computer, to the tune of a couple of hundred dollars. But if you have a megabyte of memory in your Mac, and you share the machine with your kids, *Alphabet Blocks* is terrific.

— Sharon Zardetto Aker

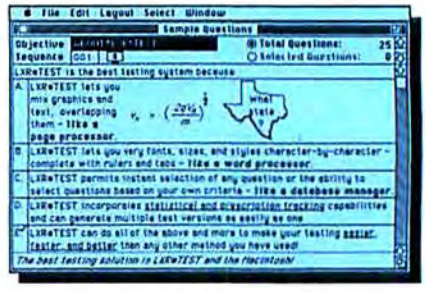
LXR•TEST ★★★★½



List Price: Teachers' version (limit of 500 questions per test bank), $199; Full version (no limit), $399. Published by: Logic eXtension Resources, 9651 Business Center Dr., Ste. C, Rancho Cucamonga, CA 91730. (714) 980-0046. Requires Mac 512E+, two 800K drives, or a hard disk. Version 3.0a reviewed. Not copy protected.

Think back to the last time you were in school and taking an exam. Probably the last thing you were concerned with was the effort the instructor put into preparing the exam. Actually, the work involved is considerable — from the thought involved in creating the questions to the more mundane tasks of sequencing, formatting, and printing out the test.

In search of some assistance, many instructors have turned to word processing and outlining programs to save time. But for the ultimate in power and flexibility, there are test generating programs. These create a large bank of questions from which you can easily select any subset for use in a particular exam. Probably the best such program available for the Macintosh is *LXR•TEST* 3.0, the latest version of an application whose original title was *measureUP. LXR•TEST* is a major revision of *measureUP,* incorporating more than two dozen changes, additions and improvements.



Essentially, *LXR•TEST* is a specialized database. One immediate benefit of this, compared to a more general purpose database, is that all the work of designing templates and report formats has already been done for you. For example, creating a multiple choice test is as simple as typing the questions and their various alternative answers in the appropriate boxes.

Every question is assigned an objective and an identification number. These can be used to subdivide questions into categories (such as book chapters), which in turn greatly facilitate searching for or selecting specific questions. At any time, you can rename or resequence a group of questions by first using SELECT to choose the desired questions (multi-

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ple selection criteria are possible) and then using RECLASSIFY to make the necessary changes.

Beyond all that, *LXR•TEST*'s flexibility in generating tests exceeds what is possible in most traditional databases. With a click of the mouse, you can change the number of alternative answer boxes displayed for each question. For example, the program easily shifts from displaying two answer boxes to six. The correct answer is indicated by a check-mark next to the appropriate letter. These choices can then be used in constructing answer keys for correcting tests. The program also allows for essay question formats, with an optional solution box for listing lengthy free-form answers or various other comments that pertain to correcting a test.

You get almost total control over fonts with the capability of making global changes. A ruler similar to that in *MacWrite* allows for right, left, or justified text. You can import both bit-mapped and object-oriented graphics and manipulate them to fit within the appropriate location of your question. The vertical size of each box within a question can be easily adjusted with the mouse, and the printed test reflects such adjustments.

When it comes time to print a test, simply choose TEST DESIGN from the File menu. This reveals a series of new windows. The most important one moves questions (in a manner similar to Apple's *Font/DA Mover*) from the test bank to a particular test. This allows you to select a subset of the total number of questions in the test bank for use in a particular test. Further options include the ability to create headers and/or footers with automatic date and page numbering. *LXR•TEST* can also randomly scramble the ordering of the alternative answers of each question or the order of the questions themselves. This results in different versions of the same test, each with its own separate answer key — useful in preventing cheating when giving a test to a large class. Another function allows linking, so that questions on a related subject always appear together.

While the overall operation of the program is impressively smooth, there are some minor problems and annoyances. The procedure for moving to specific questions within the test bank is unnecessarily awkward: First you must type in both the objective name and number of the desired question, then click on an arrow on the opposite side of the screen. This is a nuisance when creating new questions that you want to compare to existing ones, or when cutting and pasting between two questions. Something like a "GO TO..." command would be preferable. Also, while the vertical size of a box is automatically enlarged as extra lines are typed, it is not made smaller if you delete lines. Similarly, if a question is set to display five alternatives but only three are used, the empty alternatives will be unnecessarily printed out unless they are specifically deselected by the user. It would be better if the program recognized these empty boxes and automatically deselected them.

Finally, there is the limitation inherent in all such programs: their main value is if you intend to use questions more than once. While such a program can save time even if you create a unique test on each occasion, doing so prevents you from taking full advantage of the program. Despite these shortcomings, *LXR•TEST* remains a powerful yet easy-to-use application that accommodates virtually any manner of test design. If you've been looking for a way to reduce the repetitive chores of test construction, then *LXR•TEST* may well be the solution.

— *Ted Landau*

HYPERDA ★★★★½



List Price: $69. Published by Symmetry Corporation, 761 E. University Drive, Mesa, AZ 85203. (800) 624-2485. (602) 844-2199. Requires 512K and an 800K drive. Version 1.0 reviewed. Not copy protected.

To hear everyone tell it, *HyperCard* is going to change the world. So who am I to disagree? After all, to be colloquial about it, it's one hell of a product. But how do you reach all that information when you're in a word processor or spreadsheet? Sure, there's *MultiFinder,* but the memory requirements will soon send you shopping for SIMMs. [*Editor's Note: Version 1.0 of* HyperDA *is* MultiFinder*-hostile, but Symmetry says that has been fixed with version 1.01 and higher.*]

Enter *HyperDA,* a desk accessory from Symmetry Corporation that lets you open and browse *HyperCard* stacks from within another application or from the *Finder,* even with 512K Macs.

Call *HyperDA* from the Apple menu, choose a stack from a standard Open dialog, and you're in. The stack appears and runs just as it would under *HyperCard*'s Browse tool. All stack links remain operational, and you can navigate through the information in normal *HyperCard* fashion. Several of *HyperCard*'s Command-key sequences, including PEEK AT BUTTONS (Command-Option) and PEEK AT FIELDS (Command-Shift-Option) are supported. If a button triggers an action that *HyperDA* doesn't support, clicking on it will produce no response.

HyperDA also lets you search stacks with the FIND command. You type a character string into the message box and comb your stack for references. Or you can type in HyperTalk commands (*HyperDA* supports a subset of the HyperTalk language) just as in *HyperCard. HyperDA* also lets you copy graphics or text to the Clipboard and paste it into an application document. The Option key turns the Pointing Hand cursor into a cross hair for deploying a selection rectangle. Move the hand over text elements, and it changes to an I-beam cursor for selecting blocks of text. Need hard copy? You can print Individual Cards directly from *HyperDA.*

In the process of making stacks more accessible, *HyperDA* adds some things that *HyperCard* left out. First of all, the menu bar is accessible at all times. *HyperDA* can also open a stack

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QUICK CLICKS

into a resizable window. COMMAND-W toggles from Card to Window mode, which facilitates cutting and pasting operations.

Stacks behave differently depending on the mode of display. In *HyperDA*'s Card mode, stacks are always active. Click on a button and its function (if possible) is executed. And, even when hidden behind an active application window, the DA intercepts Command-key sequences. So, be aware of possible conflicts, such as COMMAND-F (FIND) and COMMAND-P (PRINT). When a stack is displayed in Window mode, however, the window must be activated before *HyperDA* commands will work or the stack can be browsed.



The manual is short, well written, and to the point. Everything you need to use the program is there. If you prefer, keep the stack version online and refer to it with the DA itself. Included is an appendix listing the HyperTalk commands supported by *HyperDA*. Other technical notes are available from Symmetry as well.

Of course, *HyperDA* is not *HyperCard*. It does not have all the original's features nor its functionality. You cannot modify stacks. Most of *HyperCard*'s visual effects are not supported. Neither can you launch programs or execute functions such as automatic dialing. But then replacing *HyperCard* is not *HyperDA*'s purpose. Its business is the retrieval of information, such as your appointment schedule or address book, from stacks without having to leave your application. *HyperDA* is, if you will, a link to *HyperCard*.

I tested *HyperDA* with a variety of popular programs and encountered no difficulties. *HyperCard* aficionados should find this DA extremely useful. Because it works on 512K machines (it's shipped on an 800K disk, so a double-sided drive is necessary), *HyperDA* is especially valuable to those Mac users who have not yet upgraded their machine's memory to the minimum 1 megabyte that *HyperCard* requires. *HyperDA* gives these users access to the ever-growing stacks of stackware without having to use *HyperCard* at all.

— Carlos Domingo Martinez

AMERICAN DISCOVERY

$$$



List Price: $59.95. Published by Great Wave Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. (408) 438-1990. Requires 512K+. Version 2.0 reviewed. *MultiFinder* hostile. Not copy protected.

American Discovery is an interactive United States geography game for one or two players, with several good features and many faults. The most significant shortcomings are an unclear focus and the absence of an age range on the product. I rate it at about 10 years old and up, although one or two of the games might be fit for a younger child.

American Discovery is actually several related activities tied loosely together into a single game structure. The first game, Find the States, is fairly simple but well done. Players identify a given state by clicking in the outline of that state on a map of the United States. The only problem with this activity is the small size of the map: It's almost impossible to pick out Rhode Island.

You have two tries to get the correct state before the game gives away the answer. There is no time limit, which I happen to like. Questions are generated randomly, so you never know what's coming next.

American Discovery gives two points for a correct answer, whether it comes on the first or second try. The score can be displayed graphically after each question (with a horse running along a track), or hidden

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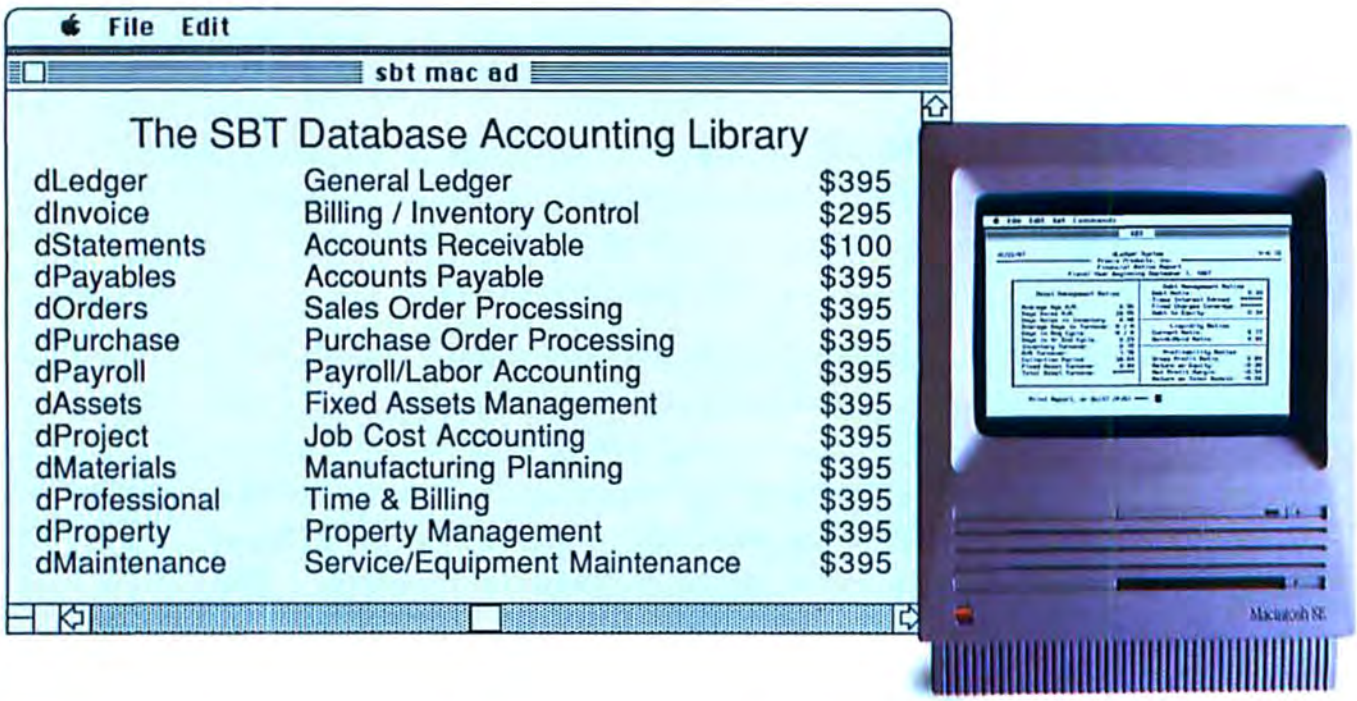


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QUICK CLICKS

until the player clicks the score (horse) icon on the screen. The score display window is very confusing, and there doesn't seem to be any particular reason for the horse analogy. Clicking the NEXT button brings up another question, or you can set a default so it jumps automatically to the next question.



You can, if you want to, play Find the States out to its conclusion (100 points is the default winning score, though this number can be changed). Since this is probably the best of the various activities, it might be a good idea. However, the manual suggests answering "a few" questions in this game, then skipping on to the next game, Click the States. If you do go on, you're still playing the same overall game, because the accumulated score goes with you. This is confusing.

Click the States is a strange reversal of Find the States. You're asked to identify a state that is highlighted on the map by clicking on the state's postal abbreviation in a small window. As the cursor arrow lands on an abbreviation, the full state name appears at the bottom of the window. Unless you happen to know postal codes, finding the state you want can be a pain, although there is a Hint button that tells you what the state's capital is.

If Click the States is supposed to teach state identification, the author has picked an odd and, I think, unsuccessful way to do it. And it doesn't teach postal abbreviations either — they seem to be there as a concession to having a small screen area to work with. Again, the manual suggests answering "a few" Click the States questions and then moving on; I recommend skipping this one altogether.

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Spell the States is a more appropriate follow-up to Find the States. You have to type the name of the highlighted state, correctly spelled (including the initial capital letter). An answer is either right or wrong.

Find the Capitals and Spell the Capitals repeat the above activities for capital cities, although the first one is somewhat misnamed: You actually find a state when you're given the name of the capital.

In Neighbors, the outline of a state is shown by itself against a white background. The object is to name all the states that border it. The program does tell you how many states there are. Again, you select the states from a box of postal abbreviations (I *really* dislike this feature). As you correctly name a neighbor, its outline is added to the central state, but not in the big picture. Instead, there is a tiny outline of the state in a small window at the corner of the screen where the region builds slowly. This is done poorly. Why not just add the new states to the big outline?

As with the other activities, you're allowed only two tries to get the correct answer. While some states only border one other state, in some cases there are several states. Tennessee, for instance, is bordered by eight states, but the correct "answer," all eight, is still worth only two points. If you make any two errors as you compile the list, the answer is incorrect. Why do you get the same number of chances for naming one border state as you do for naming eight?

Rivers and Lakes (yes, there's one more) rounds out the *basic* game. A major river or lake is shown on the U.S. map, and you have to identify it by typing the name, spelled correctly, in the Answer window.

There is also a trivia game, with questions on a variety of topics that you select, and a Locations game with informational questions about specific areas. Both of these games can be customized by a teacher or parent, with a tool called *Discovery Maker.*

And one more: Outside the game framework is the best activity of the package, Exploring. This activity lets you pick particular states or regions to find out more information.

There are several worthwhile activities in *American Discovery,* especially Find the States and Exploring. But the program fails as an educational tool. It tries to do too much in the framework of a single game, so there is no real focus or goal and it has no logical flow. While the graphics are quite nice at times, the small size of the maps often makes them unusable. Also, the manual is a mess. It doesn't seem to know if it's speaking to teachers, parents, or kids, so it doesn't do very well at any of them.

American Discovery is frustrating, because it's a good idea that hasn't been done very well. It's OK, if, like many parents or teachers, you're desperate to find kids' software for the Mac. But it could be, and should be, a whole lot better.

— *Michael D. Wesley*

SOLITAIRE ROYALE ★★★★



List Price: $34.95. Published by Spectrum Holobyte, 2061 Challenger Drive, Alameda, CA 94501. (415) 522-3584. Requires 512K+. Version 1.0 reviewed. *MultiFinder* friendly. Copy protected.

Now and again, everyone needs a change of pace. *Solitaire Royale* is such a change for Spectrum Holobyte, a company noted for its complex and realistic game/simulations. Compared to previous offerings (*Orbiter, Gato, Falcon*), *Solitaire Royale,* a Mac version of 11 popular solo card games, is simplicity itself. Eight games (Pyramid, Golf, Klondike, Canfield, Corners, Calculation, Three Shuffles and a Draw, and Reno) make up the core of the program. Most, if not all, will be familiar to veteran solitaire players, although not necessarily by the names the program uses. For example, the standard 28 cards in a seven-column arrangement is called Klondike here.

Normally solitaire games are zero-sum affairs — you play against the cards and either win or lose. However, *Solitaire Royale* adds a scoring system to each game. This not only permits you to gauge your performance in losing games, it also forms the basis of the program's Tour and Tournament features. The Tour cycles you through the eight games, recording your score for each and the overall total. The Tournament allows any number of players to compete against each other with identically dealt hands. *Solitaire Royale* records the top five scores for each hand. By the way, the Tour can also be played in Tournament mode, and you can save both Tour and Tournament games to disk.



Also included are three children's games (Concentration, Pairs, and The Wish), which are found under a sub-menu. Although conceptually simpler (they all involve matching cards), their memory-jogging character makes them challenging.

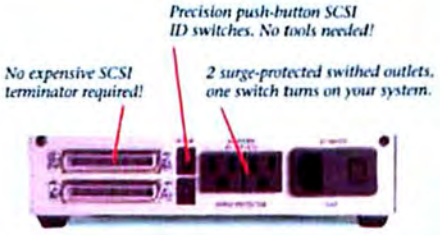
You can choose from ten different decks of cards with five different face styles; the Oriental cards are particularly attractive. Four different screen backgrounds are also available. Most menu items are accessible from the keyboard. During play, you can drag or click cards to their new locations. You can have the hands dealt at normal or fast speeds, and you can toggle the sound effects on or off. With sound, only normal speed deals are possible, but the sound effects when you win are a nice touch. Try all the games — the reward display after a win is not always the same.

As presently constituted, *Solitaire Royale* only runs on the 512K, Plus, and SE. Unfortunately, it does not run on the Mac II. The reason is the program's copy protection, which, as well as hindering transfers to hard disks, conflicts with the architecture



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of the II. If you wish to use it on the II or experience difficulties running it on SEs and Pluses with 68020 accelerators, Spectrum Holobyte will exchange (without charge) your original disk for an unprotected version — a commendable support policy. Also, a company spokesperson told me that the copy protection will be removed later this year. However, until that time, the inconvenience costs the program's rating a mouse.

Otherwise, *Solitaire Royale,* designed by Brodie Lockard of *Shanghai* fame, is solidly constructed, very playable, and visually appealing. Uncomplicated but challenging, it's the kind of game that will be played a lot because it doesn't require a large block of time. *Solitaire Royale* provides a nice change of pace when you need it.

— *Carlos Domingo Martinez*

STAR FLEET I: THE WAR BEGINS! ★★★★



List price: $55. Published by Interstel Corporation, P.O. Box 57825, Webster, TX 77598. (713) 486-4163. Requires 512K+. Version 2.1 reviewed. Not copy protected.

Star Fleet I: The War Begins! will appeal to anyone who has ever had the urge to take a spaceship's helm and single-handedly grapple with hostile alien races. But this is no game for dilettantes: Whereas previous *Star Trek*-style space operas emphasized the single mission, *Star Fleet I* is a veritable career opportunity, allowing the consistently successful player to scale the professional ladder from ensign to admiral.

Heft the handsomely illustrated game package, and you begin to get a sense of what lies within. A solid pound and a half of documentation describes the use of phasers, torpedoes, mines, tractor beams, and transporters. Shield configurations are discussed at length, as are navigation, internal ship security, and damage control. Moreover, descriptions of the Krellan and Zaldron empires and the history of their war with Humanity imbue the straightforward tactical spiel with a rich strategic texture.

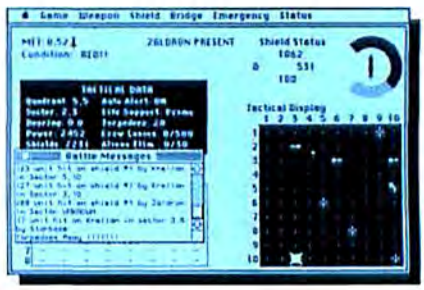
Curiously, the 60-page *Training Manual* describes advanced tactics such as hunting the invisible Zaldrons and the efficient use of shield energy, whereas the 100-page *Officer's Manual* covers the basic functions of the 13 ships. Equally curious, the *Officer's Manual,* originally written for the IBM and TI Pro versions, describes keyboard inputs that do not apply to the Mac. That text nevertheless remains an ugly necessity because of a cumbersome password copy-protection scheme. A concise and excellent 10-page supplement outlines Macintosh commands.

Rest assured that Interstel did a thorough job of porting the original version to the Mac. Double-clicking on an enemy vessel launches a torpedo; double-clicking on a disabled vessel takes it in tow with the tractor beam; do it once more and a company of space marines moves in to slug it out with the alien crew. The only impediment to a smooth interface is having to type in headings and velocities to navigate between quadrants.

Battle messages scroll across a movable, resizable window and conventional dialog boxes convey messages of varying seriousness. Indeed, the program is heavily spiced with a decidedly corny humor that surfaces at unexpected moments. As if worrying about the treacherous Krellans and invisible Zaldrons weren't enough, you must also deal with sewage backups in the captain's quarters, a crew protesting depleted pizza reserves, and power failures that flood the ship with melted ice cream. Initially funny — but ultimately maddening — is having to wait for your marines to subdue the Hungarian cook's runaway goulash. Starship Troopers this is not.

Comic diversions aside, the game's essence remains unobscured: To destroy as many of the enemy in the least possible time; earn high mission ratings; and progress up the ranks, where the missions become tougher. Success requires one thing: efficient use of the ship's energy.

Your Invincible-class heavy cruiser has 5000 units of power to energize shields, fire weapons, move within or between quadrants, track down saboteurs who sneak aboard your ship, or operate any other system. A point-blank blast from a Krellan warship scatters almost 500 units of energy to the solar winds. If you had less than 500 energy units invested in



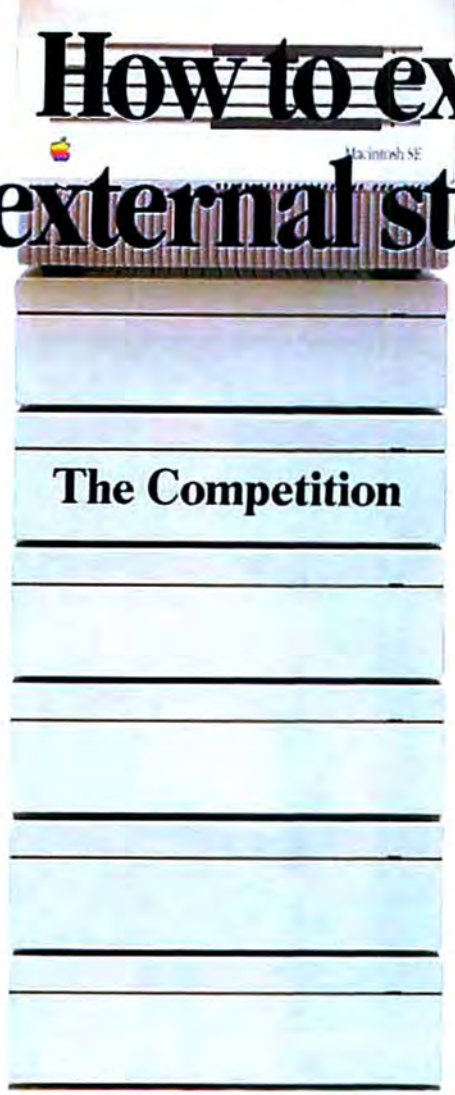
that particular shield, internal damage results. To fix it, you have to spend energy points on damage control or repair to the nearest starbase, which costs you only time and, consequently, rating points.

Two successful training missions get you out of the Academy and into uniform as a lieutenant, junior grade. Three missions with a mean rating of 75% promote you to lieutenant. Thereafter five missions are required. Superlative single-mission performances earn you any of 21 decorations, and with the numbers stored on disk, your service record is etched on a floppy for all to see.

Although many of the details contained in the documentation seem like useless window dressing — for game purposes you hardly need to know what the Officer's Academy curriculum consists of — Interstel will be fleshing out the series with the announced August release of *Star Fleet II,* which will put you in command of several Krellan vessels. Rumor even has it the series might prove resilient enough to reach *Star Fleet VII* sometime in the next decade. That should ease the minds of all the Admiral Emeriti out there, restless for a new challenge.

— *James D. Hornfischer*

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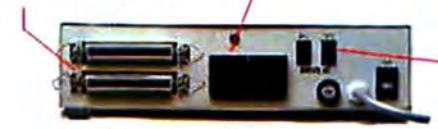


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THE BIG EVENT

The Marketing Events Newsletter Of The Civic Arena Manager

Issue Number 36 *Spring/Summer 1988*

Event Staff Pin Big Attendance Figures On Wrestling Matches



Manager Marty "The Mink" Minta with "The Human SledgeHammer"

"Let me tell you one thing. Do you really think I care who I have to beat to a pulp to defend my belt? That is, if I can find anyone without a wide yeller streak down his back to take me on. My daddy always said, 'If you can't stand the heat, kick out a window.' And brother, I see a lot of broken glass!"

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Industry attendance figures seem to prove Turk's point.

In the first two months of the year, there were 37 wrestling matches held in the country. From a 57,000 seat arena in Denver to a 3,000 seat junior college gym in Raleigh. Total attendance for the matches has been estimated to be in excess of 500,000.

And it doesn't show any sign of slowing down.

More Facilities Benefiting From Hotel Tax

Seattle and Bismarck, North Dakota are just two cities that have passed legislation to enact an "entertainment tax." Hotel and motel rooms, along with restaurants, add a surcharge to each customer's bill to help finance improvements to public convention, meeting and entertainment facilities.

"It's worked wonders for us," says Linda Connell, the chairperson of the Bismarck Meetings Group. "The amount of the tax, which varies depending on the item taxed, hasn't affected us negatively in any way at all."

"We were a little leery at first of visitors complaining about the tax, but it's so little no one seems to really notice. But even though it seems small, it really adds up quickly."

How has the tax helped Bismarck?

"Very well," according to Connell. "This spring we'll be financing over 15,000 new square feet of exhibition space for our convention center. That's space that otherwise wouldn't have been available. Unless we passed a bond issue— which never seems to be a very popular idea."

For more information on how your city can benefit from similar legislation, please contact the public affairs office of *The Big Event*.

Deadline Approaching For Next Month's Articles

Remember, the deadline for all articles submitted to *The Big Event* is the 10th of each preceding month.

Send your pieces, double-spaced please, to Carol East, Events Coordinator, POB 8384, Seattle, WA 89382.

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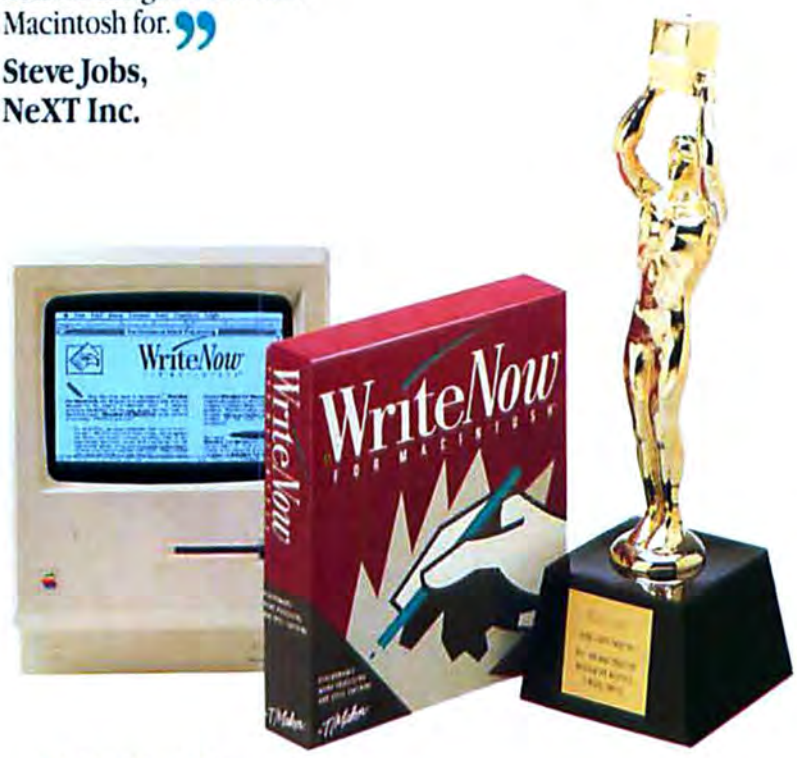
Michael Miller, InfoWorld

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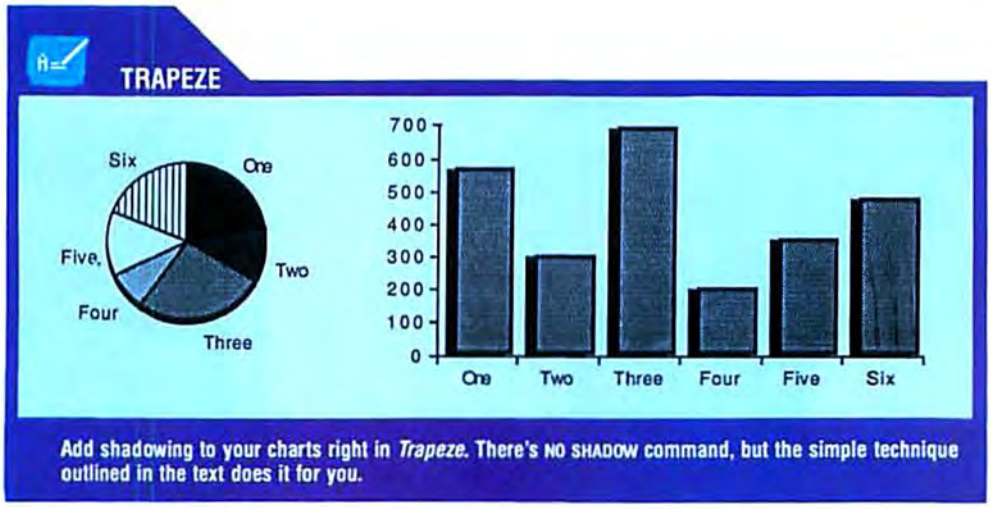
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TIP SHEET

COMPILED BY CHIP CARMAN

Found a trick, short cut, or a smarter way to get something done with a program? Share your hints by sending them to The Tip Sheet, c/o *MacUser*, Suite 250, 110 Marsh Drive, Foster City, CA 94404. We pay at least $25 for every hint we publish, plus we'll print your name and hometown.

Every month we'll select one tip as the Tip of the Month. The person who sends in that tip will receive $100 for it.



Add shadowing to your charts right in *Trapeze*. There's NO SHADOW command, but the simple technique outlined in the text does it for you.

MULTIFINDER 1.0

When selecting a desk accessory, press the Option key as you click on the Apple menu. The DA you select will bypass the *DA Handler* and operate only in the application you're currently using. Bypassing the *DA Handler* allows DAs such as *Icon Maker* to perform properly while using *MultiFinder*. (This technique works with *Suitcase*, too.) Make sure you've allocated enough memory to the application (use GET INFO) so that the application and the DA can run at the same time.

BRAD FERGUSON
NEW YORK, NY

AUTOBLACK

If you toss *AutoBlack* into your *System* folder and rename it "MacsBug," it will turn your screen dark after five minutes of inactivity, and also allow background operations to continue. The INIT version of *AutoBlack* may run into interference problems with other INITs or programs that play games with the video, like *Stepping Out*. However, the application version of *AutoBlack* appears resistant to these problems.

DOUGLAS G. MILES
ELLENSBURG, WA

TRAPEZE

Trapeze lacks an option to shadow the neat charts it produces. However, there is a way to add shadows. Start by selecting TRANSPARENT BLOCKS, which is found under the SHEET SETUP command (COMMAND-'). After creating and setting your chart to the size you want, duplicate it (COMMAND-D). This will create a second chart the same size as the original. Double-click on the new chart and select the SHOW DATA ONLY option. Set all the active data series to black (or whatever shade or pattern you want the shadow to be). Select SEND TO BACK (COMMAND-L) and the duplicated chart will act as a shadow for the original. If you need to move the charts, be sure to select both of them at the same time. This technique works particularly well with pie, bar, and column charts.

MARK TOWLER
FT. WORTH, TX

TIP OF THE MONTH

WORD 3.0X and EXCEL

You're allowed to "personalize" your master disk with *Word* or *Excel* by entering your name and/or organization into a dialog box.

But once you've done that, all future back-up copies display this information in an Info box when you open the application. The documentation states your disk will be "permanently marked." If you desire to change what was entered, here's the solution.

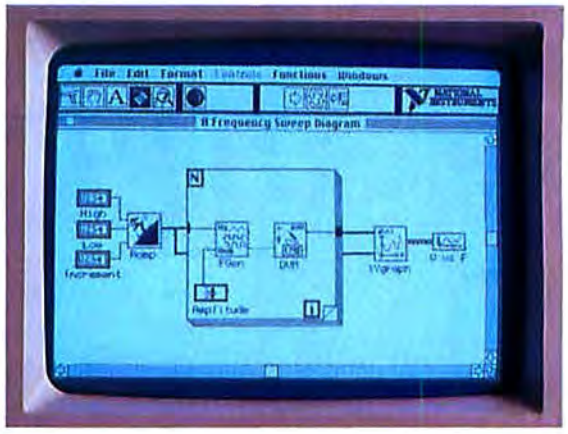
Using a file editor such as *Fedit*, display the application's data fork. Pull down the Options menu and select SET EOF or SET END OF FILE. Then select ZERO, which eliminates the application's data fork. The next time you run the application, it prompts you to enter the "personal" information again, as if you had a virgin master.

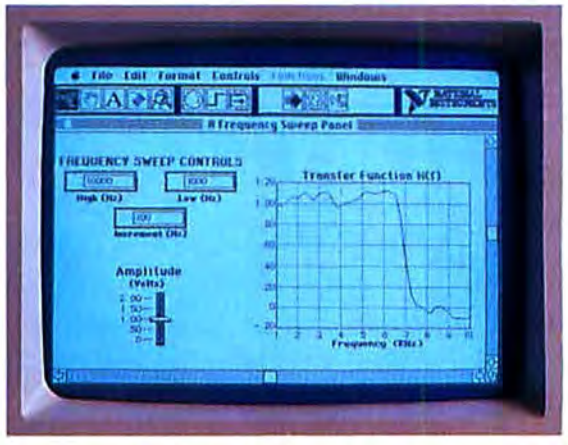
DONALD R. ALLAIN
NEWMARKET, NH

FINDER

When using the *Finder* to copy a disk, you can avoid typing the new disk name. Simply click on the icon of the original disk and select COPY from the Edit menu (COMMAND-C), then click on the icon of the disk you want to name or rename and select PASTE (COMMAND-V). You will have to add to the name or move the duplicate file to another folder







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since you can't have files with identical names in the same folder.

WILLIAM K. SACCO
NEW HAVEN, CT

JAZZ

When using *Jazz* or other programs that don't let you delete files from within the program, the following technique helps you purge obsolete versions of files.

For the files you want to delete, use SAVE AS and add a '-T' (short for Trash) to the end of the file name. When you QUIT the application and return to the *Finder* with BY NAME chosen for the View, every file that should be deleted now appears twice, once with the original name and once with the '-T' suffix. Just carry both copies to the trash.

JEFFREY A. ZARKIN
EAST LYME, CT

SYSTEM

There's an easy way to have all your cdev resources appear in the order you want. The cdevs appear in alphabetical order following the General cdev when you select the Control Panel. To put them in the order you want, simply rename the cdev files; what I do is place numbers in front of the original names.

In order to rename the cdev files, you have to duplicate them, rename the copy, then throw away the original.

PAUL R. PUDAITE
URBANA, IL

In order to get COMMAND-SHIFT-3 (the System utility that creates *MacPaint*-type snapshots of the screen) to work on a Mac II, configure the video card to use only two shades of gray. If the card is configured for 4 or 16 shades, the COMMAND-SHIFT-3 combination won't work.

GARY MUSHLIN
LEVENWORTH, KS

Here's a tip on how to get back to the *Finder* from games like *MacJack* and *Crystal Raider*.

Press the Interrupt button on the side of the computer. Then type G 40F6D8 and press the Return key. Though it may not work with every application, it's a blessing in those that it does. Play away! (I thought this might be of special interest to the reader who asked a question about a similar problem in the "Help Folder" in the November '87 issue. He was told there was nothing you can do.)

DOUG HASSMAN
LIVINGSTON MANOR, NY

When presented with a Save or Open dialog box, pressing the Tab key is a short cut to clicking on the Drive button. It selects the next available disk drive.

JASON HASLUP
CAVE CREEK, AZ

WORD 3.0X

Word lacks the ability to convert text initially typed as capitals to lowercase. COMMAND-SHIFT-K will toggle between text "as typed" and all uppercase, but it doesn't convert text initially typed as capitals to lowercase. Also the capitalizing effect is lost when the file is saved as Text Only. Surprisingly, *MacDraw* comes to the rescue. Text copied from *Word* can be pasted into *MacDraw*. Select the pasted text in *MacDraw*, then from the Style menu choose LOWERCASE. Next, copy the text and paste it back into *Word*. The newly pasted text remains uppercase even when saved as Text Only.

JEFF LINDSAY
APPLETON, WI

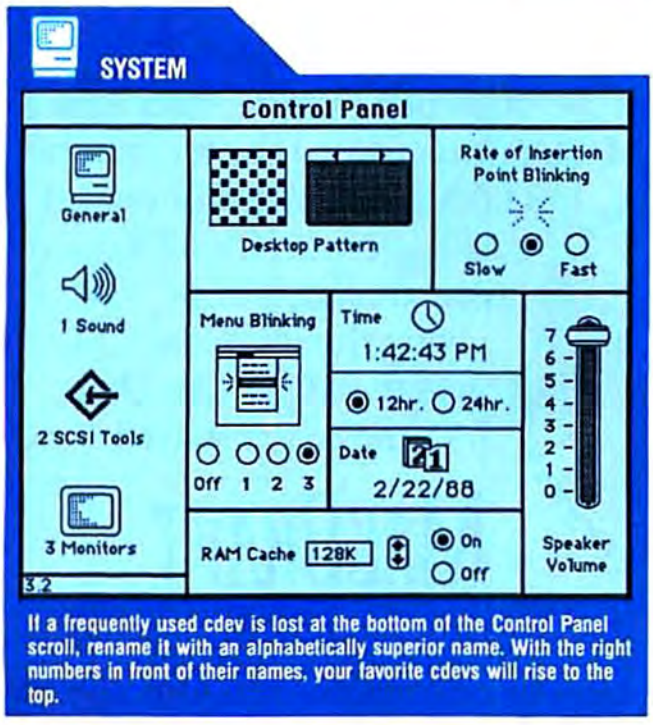
By setting BELOW and DOUBLE borders on the paragraph menu of *Word*, you can obtain a double line beneath a paragraph.

Then, on the paragraph directly below that one, set the borders for DOUBLE and ABOVE. The result is an interesting group of three horizontal lines, as shown.

MICHAEL ELENKO
SEATTLE, WA

One problem with *Word 3.0X* is that Microsoft's choice of long menu titles, such as Document and Window, plays havoc with the length of the menu bar especially when desk accessories add their own menus to the menu bar.

You can't change *Word*'s menu titles to something less verbose with a utility such as *ResEdit*, because Microsoft didn't use menu resources. So, use a file editor such as *Fedit*. Perform an ASCII Search for the capitalized word "Document." This reveals the program area where the names of menu titles are stored. Each title



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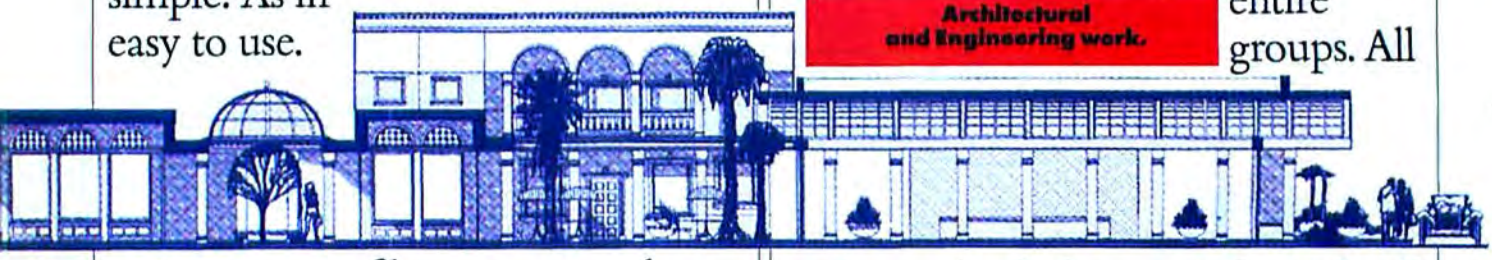
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is preceded by the length of the title. For example, change the 8 in front of "Document" to 3, then issue the command WRITE SECTOR. That's it. Using this technique, you can completely rename or shorten *Word*'s menu titles. If you rename titles, make sure your new titles are no longer than *Word*'s old ones.

NEIL RANSOM
PLAINFIELD, IL

Generally I need to spell check an entire document, but I don't like going to the beginning of a document before running the spelling checker. If I don't start at the beginning of the document, then I get a "Continue Check from beginning" dialog from *Word*.

In order to check the entire document without moving the cursor to the beginning, select the entire document by moving the cursor to the left margin, where the cursor changes to an arrow, then click the mouse while pressing the Command key. Now run the spelling checker. The entire document will be checked in one pass.

DANIEL X. MEZA
LONG BEACH, CA

In your February '88 issue I saw a tip about the use of Print Merge. This explained the "Missing Comma in Data Record" dialog box, but didn't explain how to find the omitted comma easily.

The easiest way to find a missing comma is to select the New Document button in the Print Merge window. This creates a document on the screen. When you come across the "Missing Comma in Data Record" dialog box, quit the Merge and scroll the document to the last record. The next record in your data file is the one with the problem. Once you have a successful Merge to the screen document, select PRINT and you are assured of printing the entire batch successfully.

RICK FRASER
SAN FRANCISCO, CA

While setting up a template for memos, I stumbled across the fact that the "auto date" from the headers or footers can be copied and pasted anywhere in a document. It continues to change automatically each time you start a new document. An "auto date" can be distinguished from text containing the date by using the SHOW PARAGRAPH command (COMMAND-Y), which displays a dotted outline around "auto dates." This also works for the time and page numbers. You can also paste "auto date" into the glossary and add it to your Work menu.

LELAND F. MCARTHY
REDWOOD CITY, CA

When outputting legal-size *Word* documents on the LaserWriter, the top two inches of text will be chopped off unless you select a larger print area.

To select a larger print area, hold down the Shift key when you choose PAGE SETUP. After selecting Legal Size, click the Option button. From the Option menu, select LARGER PRINT AREA. It's a documented feature, but many people seem to miss it.

JOHN T. HOLTON
NEWARK, DE

IMAGEWRITER



Here's a way to obtain the fastest and best print quality from your ImageWriter II. You can access the ImageWriter II's built-in proportional fonts from within *MacWrite* or *Microsoft Word*. Certain fonts when printed with the "draft" quality access the printer's internal proportional fonts.

These internal proportional fonts are: Boston II 10 and 12 point, Toronto 12 point, Chicago 12 point, Venice 14 point, London 18 point, Athens 18 point, and San Francisco 18 point. Other fonts, such as Geneva, use a monospaced font in draft mode that produces awkward spacing.

DAVID L. HARTEN
WILLIAMSVILLE, NY



Here's a foolproof way to deal with the Imagewriter II's frustrating tendency to crunch up paper as its paper-advance teeth lose track of the perforated edge. First, place the printer on a table top with the back of the printer about 9 inches from the edge. Then put a phonebook (about 3 inches thick) between the edge of the table and the printer. Next, thread the paper from below the table, over the phonebook, into the printer, and out again. Whenever you print, start on the second sheet of paper. Attach a heavy paper clip to the paper and let it gently pull the paper over the phonebook behind the table. Leave at least another 7 inches between the table and the wall for gathering the printed output. This costs you extra space and paper, but the printer will finally stop crunching up your paper.

ERIC KELLER
ROSEMERE, QUE., CANADA

DESIGN 2.0



Need a larger viewing area? Tired of mousing around? Here's a tip they don't tell you in the *User's Guide*. Typing Shift plus an arrow key scrolls through a document. (So does COMMAND-SHIFT plus -U, -D, -L, or -R for scroll up, down, left, or right.) Adjust the Scroll Rate by selecting PREFERENCES from the File menu. Click off Window Scroll Bars.

For an even greater viewing area, select HIDE STATUS BAR from the Edit menu and click the editing window's Zoom Box.

ROGER A. KENYON
LYNNWOOD, WA

SUPERPAINT



Here's a way to create interesting shadowed text using *SuperPaint*. In the draw mode, select the font and style (Bold works best), and type your text. Switch to the Paint layer and choose a brush pattern, such as a simple dithered gray. Next, choose TEXT PATTERN from the Style menu, and on anoth-



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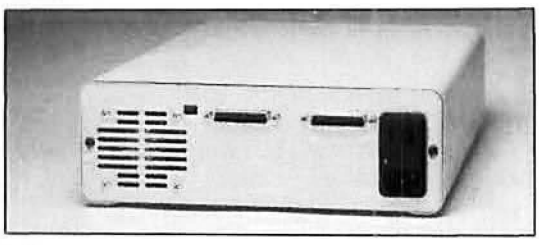
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er part of the page, type the text exactly the same as the text in the Draw layer of *SuperPaint*. Switch back to the Draw layer and move the original text over the patterned text to give you a shadowed effect. When you are satisfied with the effect, copy the shadowed text onto the Draw layer.

MICHAEL KLINGBEIL
LAKE FOREST, IL

PAGEMAKER

When using *PageMaker*, I often need to nudge an object just a small distance. Dragging with the mouse rarely provides precise control. *Easy Access*, an INIT that comes with the new *System*, is useful for this situation. Just press COMMAND-SHIFT-CLEAR to turn on the Mouse Keys. Press the 0 key to lock the mouse button down, then use the numeric keypad to move the pointer (press 8 to move up, 6 to move right, etc.). To move the pointer one pixel on the screen, tap the key once. For longer movements, hold down the key. Pressing the decimal point unlocks the mouse button, and pressing the Clear key turns off the Mouse Keys.

KEVIN FONG
LOS ANGELES, CA

RED RYDER 10.0

After a while, Scott Watson's title page gets old. To change this, go to Personal Preferences under the Customize Window. You will notice that "Display title screen at program startup" is not highlighted (on the Mac II with a color monitor, it's in red) and cannot be changed. To avoid this, repeat the function from the start, holding down the Shift and Option keys. Now you will be able to turn the Startup screen off. I feel younger already.

DENNIS BAKER
WEST COVINA, CA

MACCALC

MacCalc is extremely fast, but recalculation causes significant delays with big spreadsheets. When using the time-saving MANUAL RECALC option, *MacCalc* still calculates individual formulas as they are changed or created. This is helpful if you want to see the new values of one or two existing cells without recalculating the entire spreadsheet. Click on the cell of interest, edit its formula to make some minor change, and then edit the formula back to its original state. For example, delete the last character of the formula, then retype it. Press the Enter key, and that cell (and only that cell) is recalculated. The entire process can be done in a second or two.

JEFF LINDSAY
APPLETON, WI

EXCEL

In Page Preview in *Excel* I discovered that while in the Blow Up mode, the arrow pointer turns into the hand scrolling tool when the Option key is pressed. An Option allows you to scroll to any part of the document without going back to the Full Page mode, moving the magnifying glass, and then clicking on the other part of the document.

CARL D. SMITH
ISSAQUAH, WA

Using *Excel*'s FIND command (the one under the Formula pull-down menu, not the FIND under the Data pull-down menu) with nothing in the 'Find What:' field finds unoccupied cells. With this command you are restricted to the actual size of the worksheet (i.e., the worksheet area you have highlighted). If you try to execute FIND from the keyboard with COMMAND-H, *Excel* bypasses the Find window and selects the next occurrence of the search string. (i.e., the next blank cell). If you want to open the Find window from the keyboard, just type COMMAND-J.

DANIEL B. WEBER
PITTSBURGH, PA

You can create a cell with a blank numeric format. In other words, you can enter a value into the cell and it won't show. I use this and the LOOKUP function in an entry area of the spreadsheet for my company billing template. The blank format cell is the entry area for a code number that corresponds to the Town, State, and Zip code in the Lookup table. The code number itself is never displayed. Here's the technique:

1. Select the cell to format.
2. Choose NUMBER from the Format menu.
3. Hit the Backspace key, then the Space bar.
4. Press the Enter key to return to your worksheet.

DAN SMITH
MERRILL, IA

In *Excel*, when you want to copy a formula from one cell to another but still keep the reference absolute, you normally add a dollar sign ($) before the reference, and then Copy and Paste.

There is another way. By copying the formula from the formula bar instead of copying the cell itself and pasting it as usual you end up with the same cells being referenced in the new location. The procedure goes like this:

1. Select the cell that you want to copy.
2. Select Formula from the formula bar.
3. Press COMMAND-C or choose COPY from the Edit menu.
4. Click on X in the formula bar.
5. Select the cell that you want to paste and press COMMAND-V.

You now have exactly the same formula in the new cell.

MARIO TOPETE
MEXICO CITY, MEXICO

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JOHN ANDREW SCHAFER
CHAGRIN FALLS, OH

[*The blow-in (loose) cards are easier to get out. — Ed.*]

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HYPERCARD

If you want to expand the cursors of *HyperCard*, make the ones you need with *ResEdit*, and call them from *HyperCard* by indicating the ID Number. The browse tool and all other *HyperCard* icons and cursors are in the FONT resource of *HyperCard*, shown as a strange "12 ID 31756." You may not be able to open a resource with the ID number set so high. You can change the ID number, temporarily, to a lower number using GET INFO from the menu bar. Now you can open the resource, make your changes, then reset the ID number to the previous value. Be sure to save the changes.

MARC-ANDRE LAFORTUNE
MONTREAL, QUE., CANADA

If you want to print a card from a stack with better quality, especially text, export the card data to a Paint program, and print in the best quality available.

RALPH NARUSAK
HONOLULU, HI

If you need *HyperCard* to select a tool or pattern from the Tool menu or the Patterns menu but you're not sure what it's called, follow this procedure:

1. TEAR-OFF the menu that has the item in question.
2. Select the tool or pattern that you plan to use.
3. Type "get the tool" or "get the pattern" into the Message Box and press Return.
4. Type "it" into the Message Box and press Return.

The Message Box should contain the exact name (or, for patterns, a number) that *HyperCard* needs to identify that item.

ALISON MOORE-SMITH
PROVO, UT

Showing the time in a stack is nice, but it becomes a pain in the mouse if the stack is used for keyboard input. At the end of each minute, *HyperCard* updates the time. If you happen to be typing when the clock strikes, *HyperCard* abandons the text field to update the Time field, and your keyboard turns into a pumpkin. One way to ensure uninterrupted keying is to have *HyperCard* only refresh the time when you are not keying. The following lines in your stack script will do just that (assuming a field named "Time" is in the background):

```
on openField
    set lockText of field "Time" to false
end openField

on mouseLeave
    set lockText of field "Time" to true
end mouseLeave

on idle
    if lockText of field "Time" = true then
        put the time into field "Time"
    end if
```

BILL SWAGERTY
VALENCIA, CA

HyperCard's domenu function is useful for selecting desk accessories with a button. However, it will not work with Affinity Microsystems' *Affini•File* because of the space between the words. The space is available as a character in the Chicago font but not in *HyperCard*'s script font (Monaco). To enable *HyperCard*'s doMenu function to access *Affini•File*, do the following:

1. Open *ResEdit*.
2. Open the System File.
3. Open DRVR.
4. Select Affini•File.
5. Select GET INFO from the File menu.
6. Delete the space from the file name.

Now the file appears as *AffiniFile* and can be easily accessed with *HyperCard*'s doMenu function.

DEAN H. WETTE
CLAYTON, MO

DARK CASTLE

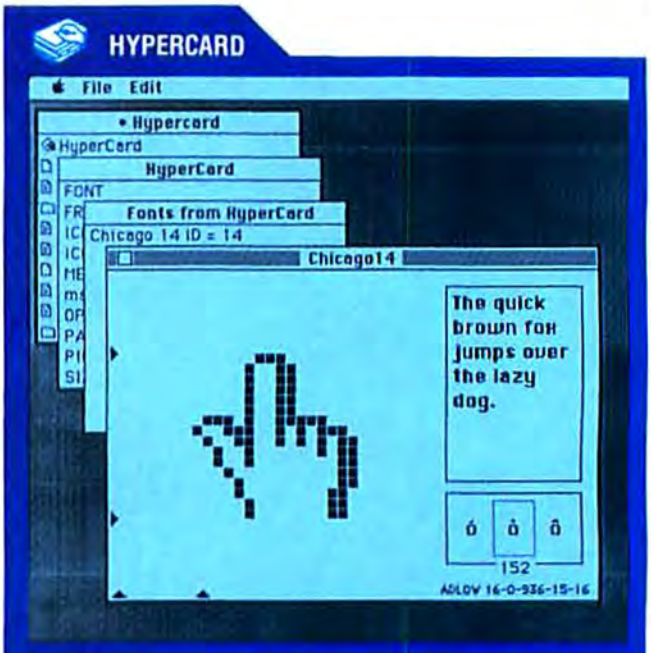
One big problem many *Dark Castle* players have is getting to Fireball without making the mistake of going through Trouble. One solution is to press the Keys 1 and 2 simultaneously while you are in the Great Hall. It is only effective if you press the keys instantaneously.

SHARIF LAURENT
AUSTIN, TX

MCMAX

Ever had your printer jam in the middle of a long-running *McMax* report or label form? Don't start back at the beginning. Use the FIND command to position the record printer where you had to stop (for example, FIND 71105). Resume your printing where you left off by specifying "rest" after the command, (i.e., LABEL FORM MAILLIST REST TO PRINT). Although the documentation does not mention this option, it works every time, just like it does in *dBASE II+*.

RUSSELL BOURDETTE
SHREVEPORT, LA



The *HyperCard* cursor and other icons are kept in the *HyperCard* FONT resource. Use *ResEdit* if you want to make alternate icons. To access these icons, *HyperCard* will need to know their ID numbers.

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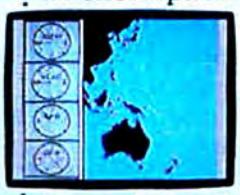
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Commodore 64/128	_____	*$1.50 ea.*	_____
IBM PC & compat.	_____	*$1.50 ea.*	_____
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Macintosh	_____	*$2.75 ea.*	_____
Total Disks Ordered	_____	*Total Enclosed*	_____

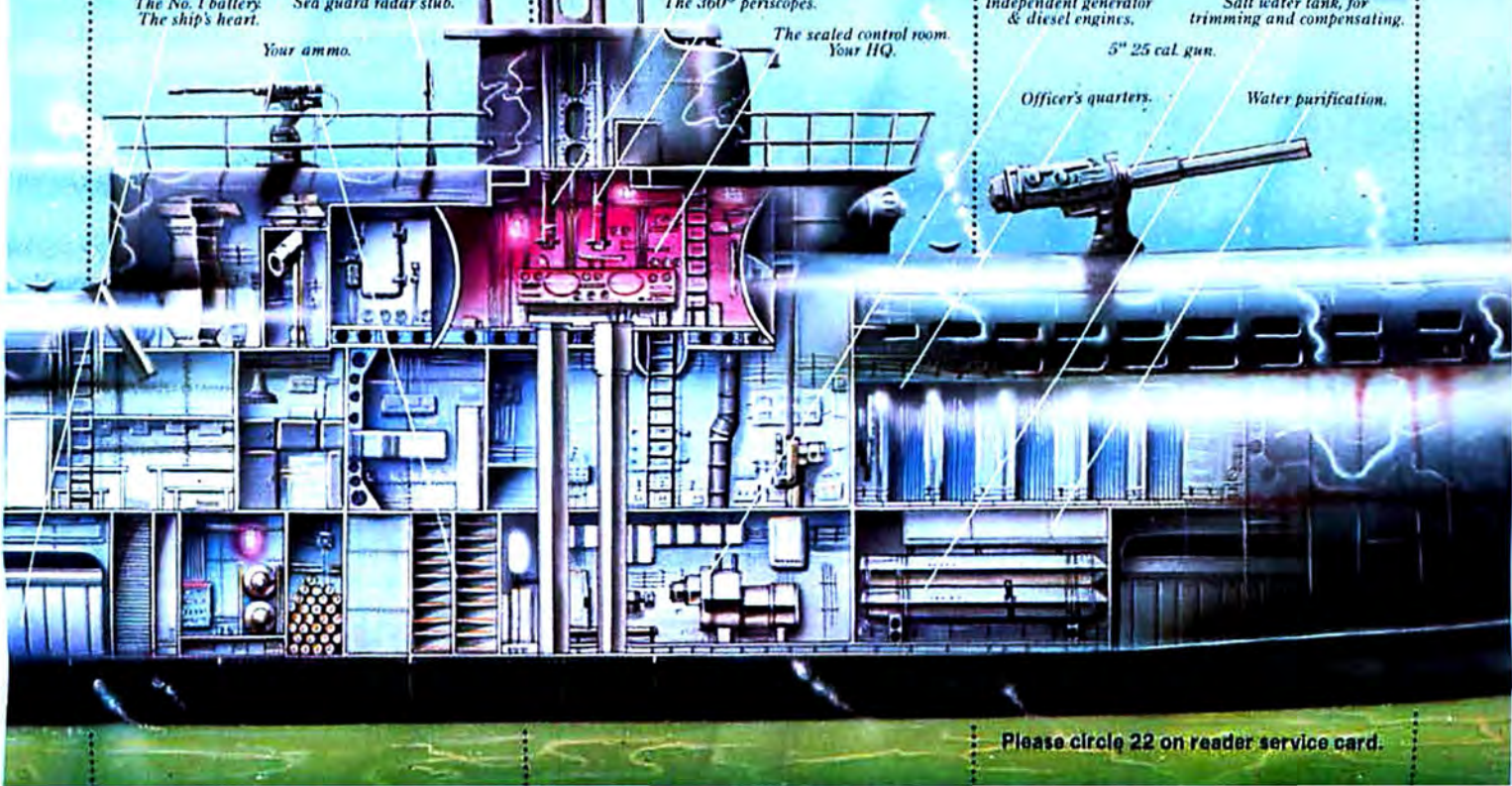
Name _____ *Phone* ( ) _____

Address _____ *Age* _____

City/State/Zip _____

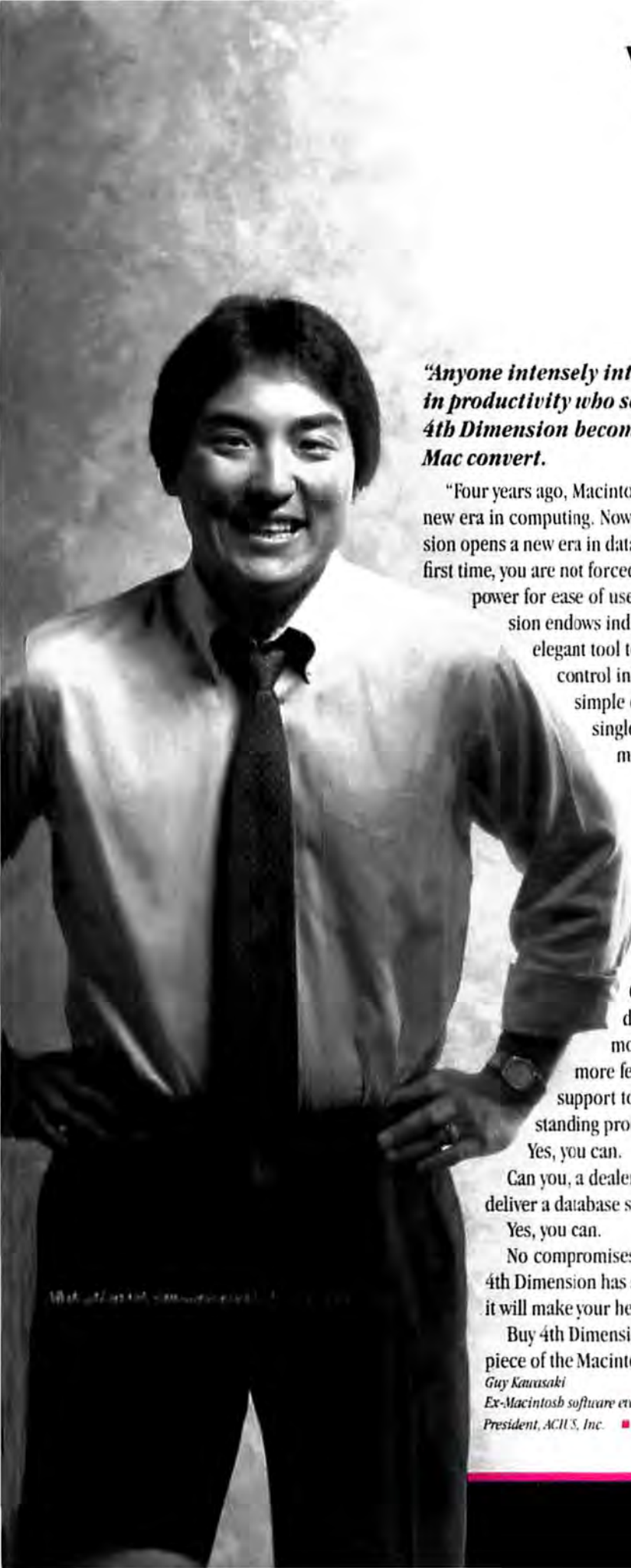
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Concept 2001 ■

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LaserWriter II

Laser Fare

Apple has taken to market a trio of printers for all tastes, styles, and pocketbooks.

GOOD THINGS HAPPEN IN THREES. SO much so that Apple's third generation of laser printers — the LaserWriter II family — comes in three flavors. The triplets aren't identical, but they're close enough genetically that upgrading from low end to high is simply a matter of replacing the motherboard. Here's a look at what the LaserWriter II's have to offer.

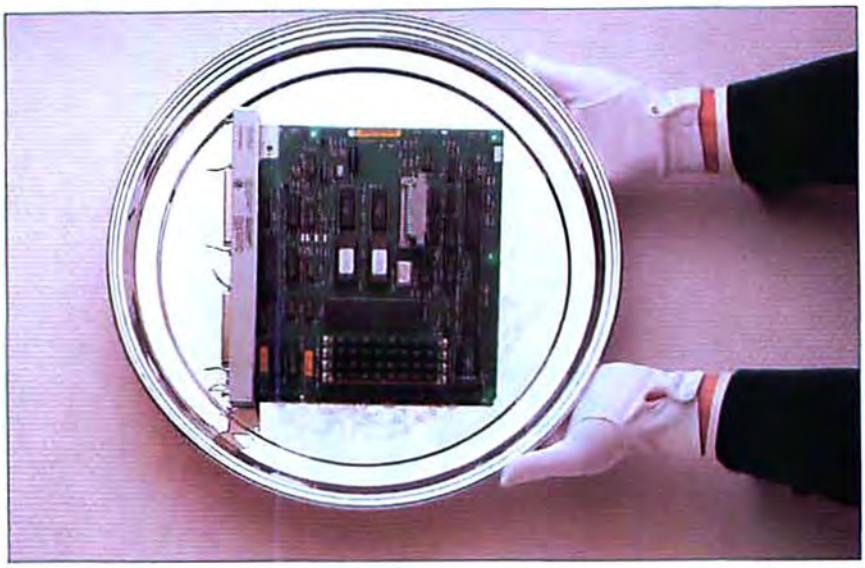
All three printers share a new design, based on the Canon LPB-SX engine (the earlier LaserWriters used a CX engine). What distinguishes the three new models is the controller boards they contain.

The new printer line meets the needs of a broader range of users than did the previous generations — the LaserWriter and LaserWriter Plus. On the low end is the LaserWriter II SC, a $2800, non-PostScript, single-user printer that connects to the Macintosh via the SCSI port rather than over AppleTalk. The LaserWriter II NT ($4600), a slightly enhanced version of the former LaserWriter Plus, now holds the middle position in the family.

The hot new item is the LaserWriter II NTX. This $6600 model, complete with 68020 CPU and 68881 coprocessor, is faster than the NT. It comes standard with 2 megabytes of RAM, but the power hungry (if they can afford it) will expand all the way to 12 megabytes. A ROM expansion slot allows you to add user-specific fonts (for example, a standard company font or logo). But most significant, the NTX controller board has a SCSI port to which you can attach a hard disk. You can then use this hard disk to store downloaded fonts and to provide an enormous virtual font cache. The NTX is the first 300-dpi printer to offer this capability.

BY HENRY BORTMAN

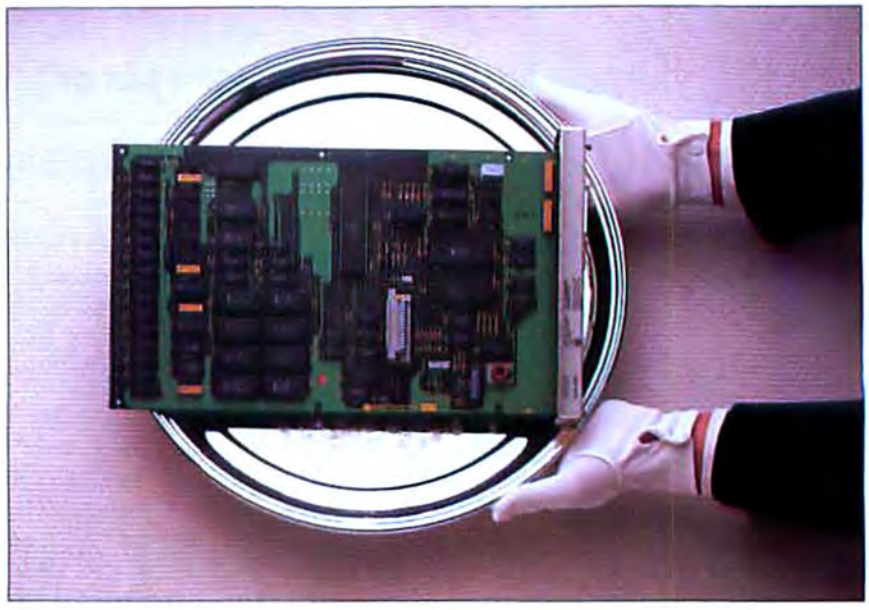
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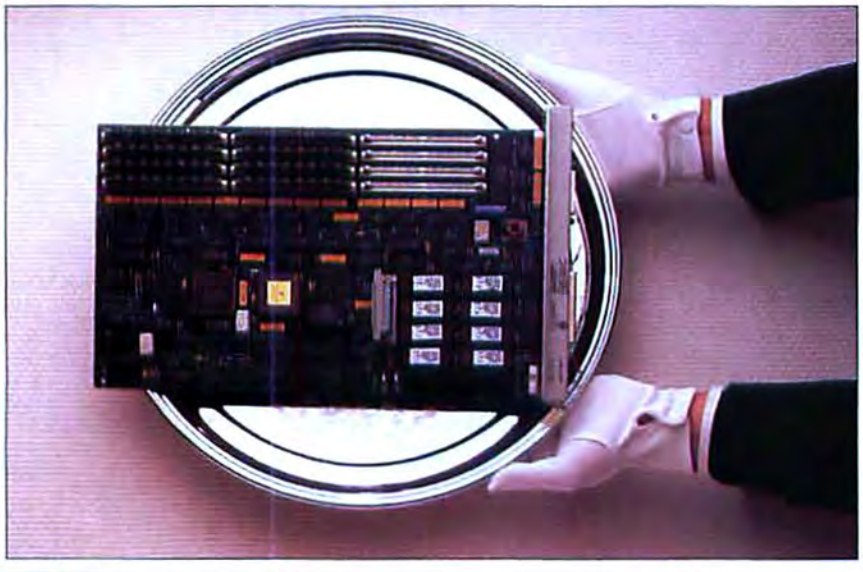
One noteworthy feature of the LaserWriter II line is that there's a smooth upgrade path from the SC all the way up to the NTX (see sidebar). Apple has been very kind to its users by making upgrades as simple as removing two screws and swapping controller boards. It is to be commended for this move.

NT: NOT THRILLING

The LaserWriter II NT is, frankly, boring — more or less the same machine as its predecessor, the LaserWriter Plus. It's based on the same 68000 microprocessor and contains the same 35 fonts. The changes can be found in the redesign of the body of the printer — it's more compact



A three course meal of controller boards for the LaserWriter II gourmet. Above: an appetizer of the QuickDraw-based SC. Right: The NT is a mid-priced entree in the PostScript-based printer market. Below: The NTX feeds those with a hearty appetite for RAM. This board can be upgraded to 12 megabytes.



than the Plus and weighs only 45 pounds; in the amount of RAM — 2 megabytes as compared with 1.5 megabytes in the Plus; in its ROMs — the NT (and NTX) ship with Version 47 of PostScript, providing significant speed improvements over Version 38, which accompanies most Pluses; in the paper tray — which holds 200 sheets instead of 100; and in a new print engine — the Canon SX.

The new 8-pages-per-minute (ppm) engine is a mixed blessing. Responding to complaints that the blacks should be blacker, Apple chose an engine for its new machines to provide just that. The new La-

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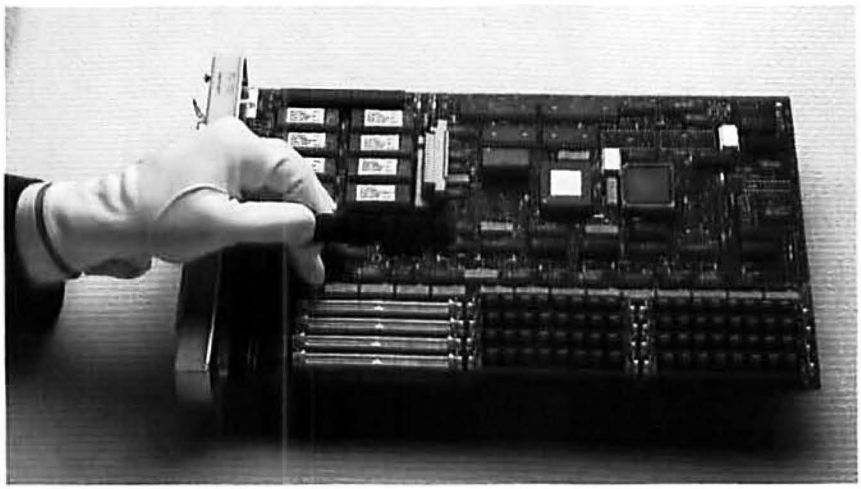
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Upgrading in the LaserWriter II family is as easy as "plug and print." Shown here is the NTX board. Notice the SCSI port for attaching a hard disk to store downloaded fonts. You add RAM (below) no differently than you would on a Mac II motherboard.

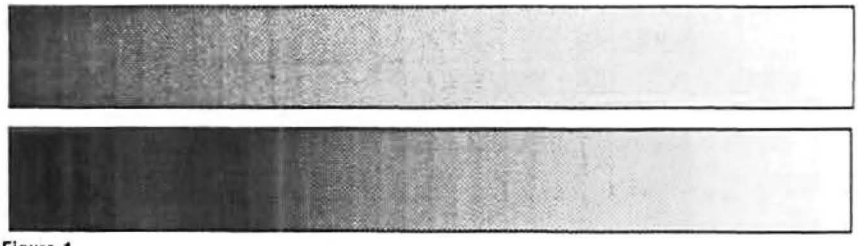


Figure 1
By substituting the Canon SX engine for the formerly used CX, Apple has opted for poor grays in order to get better blacks. The top gray scale, printed on a LaserWriter Plus, never gets denser than about 85 to 90% in original printouts (although it may look darker in reproduction). The LaserWriter NT's gray scale, on the bottom, has the opposite problem. It is already close to black by the time it gets three-fourths of the way through the scale. The Plus' scale is also more evenly graded than the NT's. And large gray areas on the NT print out with noticeable streaks.

serWriters can cover a page with solid blacks as dark as any other toner-based laser printer on the market.

Unfortunately, the high quality of the gray scales available on the old CX LaserWriters seems to have suffered. Formerly, LaserWriters shared with QMS printers the distinction of having the most even, well-delineated, 300-dpi gray scales available. The gray scales shown in Figure 1 compare the output of a LaserWriter Plus with that of a LaserWriter II NTX.

The LaserWriter II NT is, frankly boring — more or less the same machine as its predecessor, the LaserWriter Plus.

What I can't show, because of space limitations, is that pages printed with large gray solids come out streaked on the new printers. Apple was noncommittal about whether these gray-scale problems might be fixed, saying it would wait to see how many users complained.

Timing tests (see Figures 2 and 3) show that the NT, with Version 47 of PostScript and expanded RAM, is now in line with other printers in its price range. In the October '87 issue of *MacUser*, the LaserWriter Plus was tested for speed and came out significantly slower than other printers in its class.

Apple doesn't let you expand the NT's RAM. Too bad. The ability to add even 1 megabyte of RAM would make this midprice printer work for a broader range of users. Given the gray-scale problems of the new engine, you'd be wise to compare other printers in the same price range that offer more RAM or have a faster print engine. Keep in mind, though, that the ability to upgrade to an NTX is a significant advantage that Apple has over other PostScript printer manufacturers. You may think you'll never need the power of an NTX —

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NTX: NEARER TO EXCELLENT

The NTX, a Mac II in a printer case, is a remarkable advance in 300-dpi printers. It uses the same 8-ppm print engine as the SC and NT, but it is rarely the speed of a printer's engine that determines how fast it spits out pages. Usually it's the speed with which it performs the number crunching required to image the page. The NTX, with its 68020 CPU and 68881 math coprocessor, makes mincemeat out of some pages that the NT and others in its class cogitate over for minutes on end. Interestingly, however, the NTX shows no speed improvement over the NT on scanned gray-scale images. In this case it's the speed with which the Mac sends data over AppleTalk that is the limiting factor.

The new LaserWriters can cover a page with solid blacks as dark as any other toner-based laser printer on the market.

Although there are other 300-dpi machines on the market that employ 68020 chips, the NTX is the first to offer users the twin options of installing up to 12 megabytes of RAM and attaching a dedicated hard disk to the printer. What would a printer do with 12 megabytes of RAM? It can only image an 8.5 x 14-inch page, anyway. And why would it need a hard disk?

To answer a question with a question: How many fonts do you use? If your answer is, "Just the ones in the printer," you can probably go back to reading about the NT. If, however, your answer is more like, "As many as I can afford," the NTX may be the printer you've been waiting for (see the sidebars for an explanation of the ins and outs of extra RAM and dedicated disks and the cost of various expansion and upgrade options). Figure 4 shows the kinds of speed improvements extra RAM and hard disks offer.

You can use Apple's new Font Download Utility (see Figure 5) with both the NT and NTX. When you use it with the NTX, it enables you to download fonts to either the printer (RAM) or its hard disk. This utilit put together well, and its on-line help is mostly accurate. There's one problem, though. You'll be unable to download or to initialize the disk if you start up the utility without going through the proper steps. To wit: Turn on the disk, turn on the printer, then select the printer from the Chooser. The Help file doesn't explain that you also have to quit and

Cache As Cache Can

The NTX is the first 300-dpi printer to allow for RAM upgrades to 12 megabytes and the first to take advantage of PostScript's ability to attach a dedicated hard disk. Both RAM upgrades and hard-disk add-ons increase performance when you're working with large font libraries.

Two aspects of PostScript's printing process use up printer memory. Characters in PostScript are stored as mathematical descriptions of their outline shapes. These character outlines must be available in memory — let's assume for the moment that no hard disk is attached — or they can't be printed. The LaserWriter II NT and NTX both contain, in ROM, the outlines for 35 different fonts. If, however, you want to use a font not contained in ROM, you must first download it into RAM.

One of the unsavory "features" of PostScript is that a job that uses more fonts than RAM can hold causes the printer to reset itself. You don't get any warning — just an error message and a start-up page. So, the more RAM you have available, the more fonts you can download without worrying about a reset. With 2 megabytes, the NTX accepted 15 fonts before it hiccoughed. With 3 megabytes, I was able to download more than 40 fonts without a reset. These are not absolute numbers. Because different fonts take different amounts of space, the number you can download depends on which ones you use.

When you send a page that contains text to a PostScript printer, the PostScript interpreter "scan converts" the outline descriptions of the characters and generates bit maps. These bit maps tell the printer where to put dots on the page. Each different character in each different font, at each different point size and angle of rotation, must be scan-converted separately. This is a time-consuming process. Fortunately, PostScript maintains a RAM cache of recently used, already-scan-converted bit maps, which speeds the process when the same characters are used repeatedly. This, too, takes up memory, however.

When the RAM cache gets full, the printer dumps the least recently used bit maps out of memory to make room for new ones. If you later need to reuse characters that have been dumped, they must be scan converted again. Again, the more RAM you have, the more characters you can cache (see Figure 4). Figure that an entire alphabet of uppercase and lowercase characters for a single font at 12 point in a single rotation takes roughly 10K to cache; an alphabet in 6 point, about 5K; and in 18 point, about 20K. Furthermore, bit maps for sizes greater than 20 points are generally stored in compressed format, and large sizes are not cached at all (it's faster to scan convert them again). Considering that the NTX can be expanded up to 12 megabytes of RAM, there's plenty of room for caching.

But there are drawbacks to relying on extra RAM for font efficiency. RAM is volatile. All downloaded fonts and cached characters will be wiped clean each time you turn off your printer. And expanding above 3 megabytes of RAM is expensive (see sidebar on pricing).

Enter the hard disk. With a SCSI disk attached to the NTX, you can use fonts to your heart's desire. Fonts downloaded to disk remain there permanently. You don't even need to keep them around in your *System* anymore. Initially, 20% of a hard disk is set aside for downloadable fonts; the other 80% is for the cache. So even with a 20-megabyte hard disk, you have 4 megabytes available for downloadable fonts. This is almost enough room for the entire Adobe type library and will probably be sufficient for most users. But if it's not enough, you can go to a larger disk.

relaunch the download utility after going through the previously listed steps. But you do. (Remember, you heard it here first.)

Once you've downloaded a font to the NTX's hard disk, you don't need it in your *System* folder anymore. Keep the original font disks handy, though. While doing tests for this review, some of the fonts I downloaded to disk got glitched. Documents using those fonts simply wouldn't print. I don't know how it happened, but I know I didn't like it. Fortunately, I didn't have to reinitialize the disk. I recovered by redownloading the problem fonts (after I had unsuccessfully tried recopying their screen fonts with *Font/DA Mover*, reinitializing the printer, and rebooting my Mac). I was also fortunate to have a direct line to an Apple employee who helped me work through the problem. I wonder if Apple dealers will be as knowledgeable if users encounter similar problems.



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Another benefit of having a hard disk is that you will never experience the download overload/reset problem mentioned earlier. When the initial 20% of the disk set aside for font downloads is filled up, *System* software tells the disk to steal some of the space assigned to font caching and reassign it for download use.

The disk-based font cache works by storing the overflow from the RAM cache. Whenever the RAM cache has to toss some bit maps out to make room for new ones, it offloads them to disk. At the end of each print job, the RAM cache is also emptied to disk. Should the space available for the cache on your disk come close to filling up, it will decache all bit maps that were created prior to a specific date and time, leaving room for new ones.

So how do you decide how much memory and/or how big a disk to get? Apple suggests that for those who are not font fanatics, the addition of 1 megabyte of RAM will probably suffice. This is certainly the most cost-effective solution ($249). If, however, you need more power than 3 megabytes can provide, you'll probably want to try a hard disk before adding additional memory. Service bureaus, type shops, and others who regularly use a large type library, many different sizes of type, or a lot of rotated type (*Illustrator, Cricket Draw,* and *FreeHand* users) fall into this category. Four 1-megabyte SIMMs — the 68020 requires that you add them four at a time — cost $1199. Apple's 20-megabyte hard disk is only $100 more. And hard disks have the advantage of not being volatile.

SC: SLIGHTLY COMMON

The release of the SC marks a new direction in Apple's marketing strategy for laser printers. With the SC, the company decided to go after the low end — people who want letter quality but are using an ImageWriter because they can't afford the $4000+ for a PostScript printer. That such a market exists is borne out by the popularity of HP's LaserJet line.

Two things most clearly distinguish the SC from the NT and NTX. First, it's not a PostScript printer, and second, it cannot be networked — it's for use by a single Macintosh computer. Although you can always upgrade an SC to an NT later, there's a cost penalty for doing so (see sidebar). If you think you may need to connect more than one Mac to your printer any time in the near future, the SC is probably not for you.

Not being a PostScript printer has advantages and disadvantages. The big advantage is it's a lot cheaper. If you don't have to pay for PostScript, you can walk home with a printer for $2800 — that's $1800 less than the cost of Apple's mid-price NT.

On the down side, you are limited in the images you can print. Most significant, your choice of typefaces, styles, and sizes is restricted. If you want to print a particular font in a particular size and have it look good — which is the whole point — you need a screen font four times as large. And that means a separate screen font for *each* size you use. This consumes more disk space than is needed for PostScript printing, which requires that only one size of each typeface be available on-disk.

Fortunately, Apple has included with the SC two disks containing a wide range of point sizes — 9, 10, 12, 14, 18, 24, 36, 40, 48, 56, 72, and 96 — for Times, Helvetica, Courier, and Symbol — the four typefaces shipped in the original LaserWriter.

Unfortunately, that's not good enough. SC output (see Figure 6) has

poor baseline alignment. Characters such as *c* and *b* should hang slightly below the baseline, not sit right on it as they do when printed by an SC. Furthermore, character widths for the SC don't match those of PostScript printers. Thus, although there is an easy upgrade path to the NT, users who upgrade will have to reformat all their documents when they do so.

Overall text appearance is a little heavy, and odd point sizes, such as 11- or 13-point, produce poorly weighted characters. But perhaps worst of all, Apple has continued its ridiculous practice of providing screen fonts for only the Roman (plain) style of each typeface. As a result, the SC cannot produce true italic type on serif faces.

Nor can the SC do a quality job of printing graphics that rely on PostScript. This includes rotated type; some of *Cricket Draw*'s special effects, such as fountains; and *Illustrator* drawings.

To use the SC, you must install the new *System* software that comes with the printer — *System Tools* 5.1, which includes a *System* file (Version 4.3), a new *LaserWriter Driver* and *LaserPrep* file (Version 5.1), and

QuickDraw, McGraw?

There are some misconceptions floating around about what the SC is and isn't. It is clearly not a PostScript printer. What is less clear, however, is that it isn't a QuickDraw printer, either.

Macintosh applications (most of them, anyway) draw images on the screen with QuickDraw. When you print to a PostScript printer from a Macintosh, these QuickDraw commands are translated into PostScript commands, which are then sent to the printer. PostScript printers contain interpreters that retranslate these PostScript commands into dots on the printed page.

A "QuickDraw printer," if such a beast existed, would contain a QuickDraw interpreter. The Macintosh would send raw QuickDraw commands to the printer, much as it sends PostScript commands to PostScript printers, and the printer would translate them into output dots. This is not how the SC works. Rather, the Macintosh itself translates QuickDraw routines, using the SC driver (which users must install into their *System* folders). What is sent to the SC is a plain old 300-dpi bit map. The process is more like printing to an ImageWriter than to a PostScript printer but at a higher resolution.

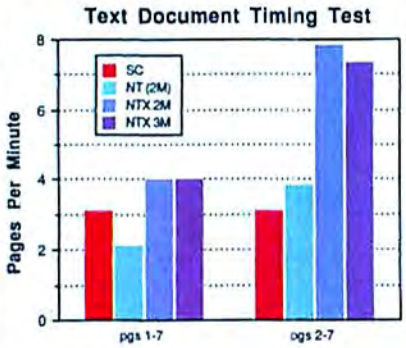


Figure 2
For a seven-page *Word* document, consisting mostly of Times Roman 12 point with some Helvetica bold subheads, the NTX averages much higher throughput than the NT. After the first page of a simple document, during which most of the time-consuming, font-caching activity takes place, the NTX can image pages almost as fast as the printer can churn paper. The SC, which uses bit-mapped rather than outline fonts, maintains even throughput for all pages, averaging better speed than the NT in some cases.

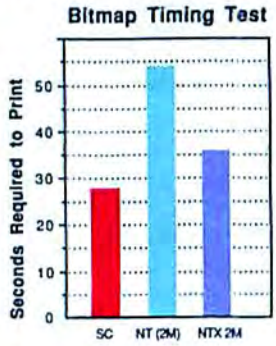


Figure 3
Although the SC is generally slower than its PostScript counterparts, when printing bit-mapped graphics, it leads the pack, beating even the NTX.

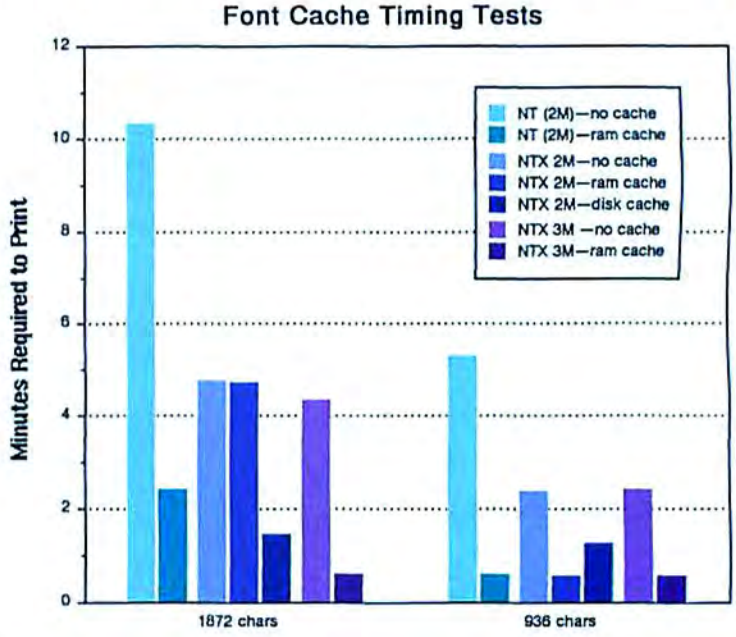


Figure 4
On the left are times for printing a single page with 1872 different characters, each of which had to be cached separately. On the right are times for a document that had half the caching requirements. Several points command notice here. First, having cached characters makes a big difference in throughput. Second, the NTX builds a cache much, much faster than the NT does. Third, the NTX can't benefit from caching with a document containing 1872 characters, whereas the NT can. The NTX's RAM cache is slightly smaller, so it dumps the oldest characters before they can be used again. Fortunately, only fanatics are likely to produce a document requiring such heavy-duty caching. Fourth, although the disk cache operates more slowly than the RAM cache, it is more consistent. Thus, it can save time on short documents, each of which might otherwise require the cache to be built again.

Each of the three graphs was created with *Cricket Graph* and enhanced with *Canvas*, using identical procedures. All type is Helvetica or Helvetica Bold. Figure 2 was printed on a LaserWriter Plus, Figure 3 on an NTX, and Figure 4 on an SC. Can you detect the differences?

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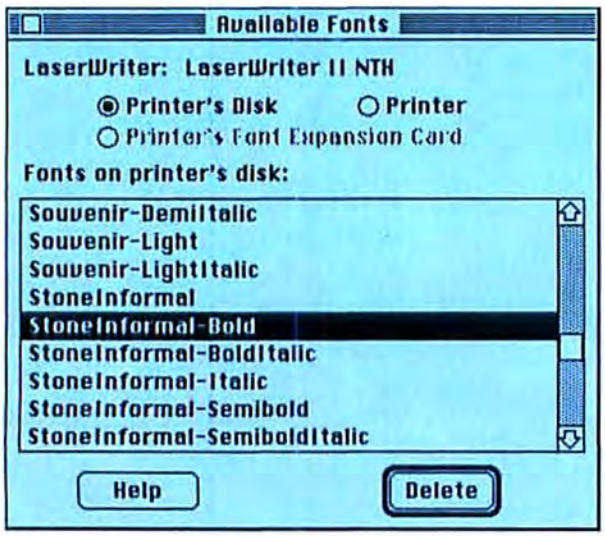


Figure 5
Apple's new *LaserWriter Download Utility* lets you download fonts to any PostScript printer or hard disk attached to such a printer.

Pay As You Go

Perhaps it was stung by user criticism that there is no upgrade path from the Macintosh Plus to the SE, or maybe it is merely exhibiting good business sense. In any case Apple ensured that its LaserWriter II line could be upgraded by housing all three of its new printers in the same shell. Although there are great differences among the three models, users can enter at any level and be assured that, should their needs change in the future, they will be able to upgrade easily.

The LaserWriter II NTX, which comes standard with 2 megabytes of RAM, can itself be upgraded. It contains sockets for 12 SIMMs, each of which can accommodate either 256K or 1 megabyte of RAM. Those who frequently use a large number of fonts may wish to attach a hard disk to the NTX. ROM cards, containing often-used or customized fonts, can also be installed.

At press time, guess whose hard disks were the only ones guaranteed to work when connected to the NTX? If you guessed a computer company whose name begins with A, you guessed correctly. According to Apple, the NTX's SCSI connection was designed according to spec, and other hard-disk manufacturers' incompatibility with the NTX is a result of their failing to conform to that spec. Apple says it is not their intention to lock the competition out of this market. But, apparently, it is one specific SCSI command that most hard-disk manufacturers don't implement that causes the problem. You don't suppose Apple could have warned competing hard-disk manufacturers so that the latter would be ready with compatible units when the NTX shipped, do you?

Apple is also the only company producing the SIMMs that plug into the NTX. You can't use the same SIMMs that go in the Mac; the NTX SIMMs, although they use the same chips, are configured differently and have a different number of pins. Several third parties are considering production of NTX-compatible SIMMs.

Here is a rundown of what is currently available and what it costs:

LaserWriter II SC	$2799
LaserWriter II NT	$4599
LaserWriter II NTX	$6599
SC-to-NT upgrade	$2099
SC-to-NTX upgrade[1]	$4299
NT-to-NTX upgrade[2]	$2499
1-megabyte upgrade for NTX	$249
4-megabyte upgrade for NTX	$1199
20-megabyte hard disk	$1299
40-megabyte hard disk	$1999

[1]You don't have to return the SC board; you can move its 1 megabyte of RAM to the NTX board for a total of 3 megabytes in the NTX.

[2]You have to return the NT board to Apple.

PrintMonitor, *Background Printer*, and *Backgrounder* files (Version 1.1). Those not using an SC can upgrade to the new software, but it's not necessary. Its main advantage is that it handles the new large-point-size screen fonts more gracefully. When Version 6.0 of *System Tools* is released, the changes in *System* 4.3 will be integrated into the *System* file that all Mac users will share.

And, in case you're wondering — yes, the SC is supported for *MultiFinder* background printing. Some applications may cause problems, though. I found one printing a fairly simple graph (the one in Figure 4) from *Canvas* to the SC. *PrintMonitor* kept complaining that it didn't have enough memory. I finally had to turn off background printing.

Not being a PostScript printer has advantages and disadvantages. The big advantage: It's a lot cheaper.

Considering that General Computer's PLP costs several hundred dollars less than the SC and that it, too, can be upgraded to a PostScript printer, you'd be well-advised to do some comparison shopping before signing on to the SC. For what you get, it's overpriced. It should have been a $2000 printer.

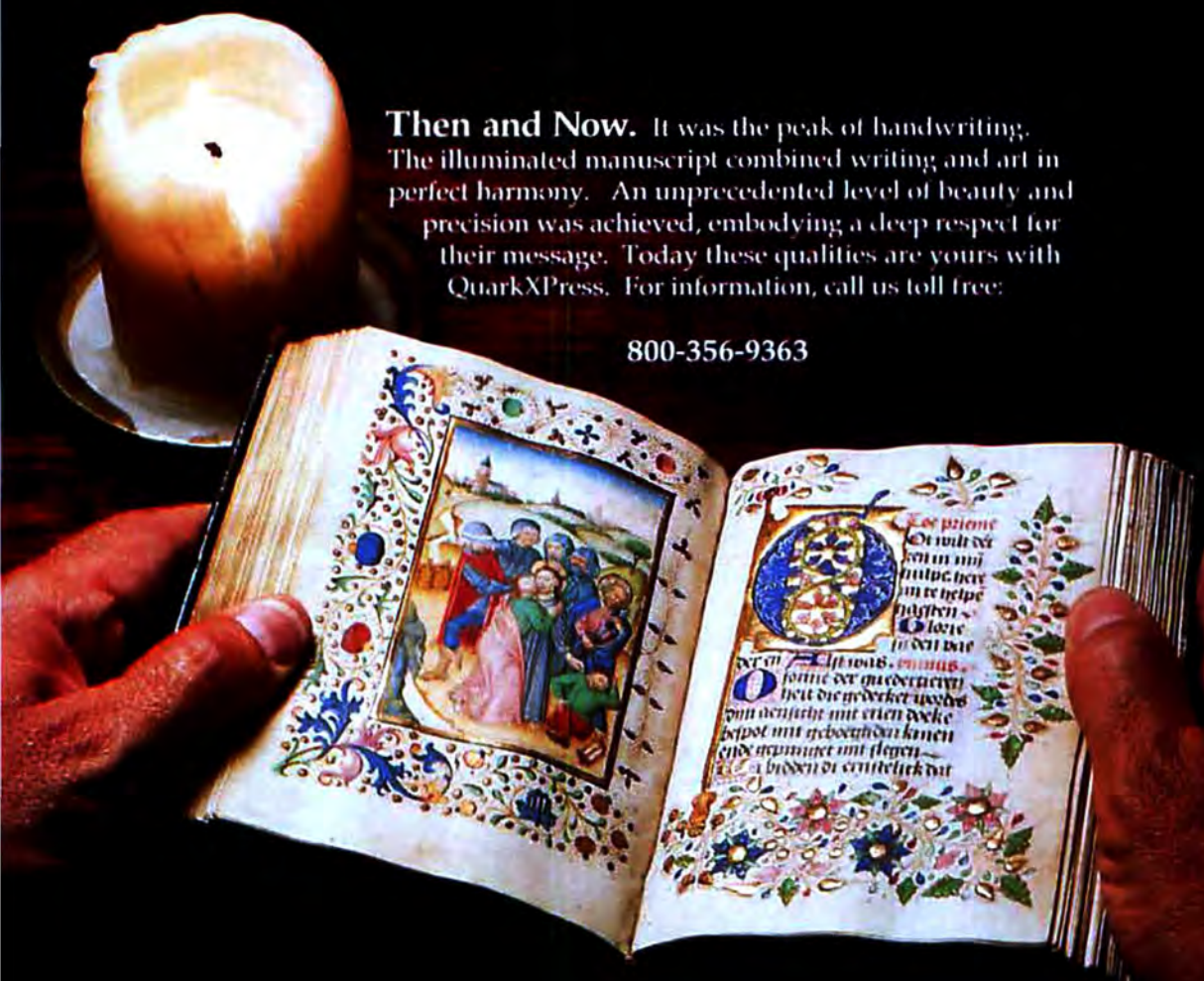
FINAL ANALYSIS

Apple's new printers present an impressive lineup. But don't jump at them just because they're from Apple. If you need the power of an NTX, it's the only game in town, and it's worth it. With the NT, Apple's basic PostScript offering is now worth considering, whereas the LaserWriter Plus, as rated in the October '87 issue, was a comparatively poor value. But there are machines on the market that are both cheaper and more powerful than the NT (although no others that offer an up-

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Laser Fare



Figure 6
A comparison of type on (a) the SC, (b) the LaserWriter Plus, and (c) the NT/NTX. The two full lines of type in each sample are 12- and 13-point Times italic. Note that characters printed on the SC have poor baseline alignment (the *e* in *The*, for example); that odd point sizes are poorly weighted (the *v* in the 13-point *over*); and that, because Apple provided only Roman (plain) screen fonts, the SC can't print true italics on serif faces. Note also that although type from the NT is darker, it is more plugged up. Look, for example, at the point where the curved portions of the *q* and *h* join the stems or at the magnified 6-point type.

grade path such as Apple does to the NTX).

And the SC? It needs some work, and it costs too much. Take a hard look at the PLP first.

HENRY BORTMAN IS A FREE-LANCE WRITER BASED IN SAN FRANCISCO AND IS A FREQUENT CONTRIBUTOR TO MACUSER.

MACUSER RATING

LaserWriter II NTX

★★★★½

Printed Documentation	■ ■ ■ ■ □
On-Screen Help	None
Performance	■ ■ ■ ■ ■
Support	■ ■ ■ □ □
Consumer Value	■ ■ ■ ■ □

Comments: Apple's top-of-the-line PostScript laser printer. **Best Features:** 68020 makes it very fast; expandable to 12 megabytes; can attach dedicated SCSI hard disk for fonts. **Worst Feature:** Shares gray-scale problems of NT. **List Price:** $6599. Requires 512K+. Manufactured by Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; (408) 996-1010.

MACUSER RATING

LaserWriter II NT ★★★

Printed Documentation	■ ■ ■ ■ □
On-Screen Help	None
Performance	■ ■ ■ □ □
Support	■ ■ ■ □ □
Consumer Value	■ ■ ■ □ □

Comments: Apple's midprice PostScript laser printer. **Best Features:** Faster than a LaserWriter Plus; blacker blacks. **Worst Features:** Gray scale is too dark; pricey. **List Price:** $4599. Requires 512K+. Manufactured by Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; (408) 996-1010.

MACUSER RATING

LaserWriter II SC ★★★

Printed Documentation	■ ■ ■ ■ □
On-Screen Help	None
Performance	■ ■ ■ □ □
Support	■ ■ ■ □ □
Consumer Value	■ ■ □ □ □

Comments: Apple's low-end QuickDraw laser printer. **Best Features:** Can be upgraded to an NT or NTX; reasonably fast. **Worst Features:** Poor quality text; limited to QuickDraw graphics. **List Price:** $2799. Requires 1M+. Manufactured by Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014; (408) 996-1010.

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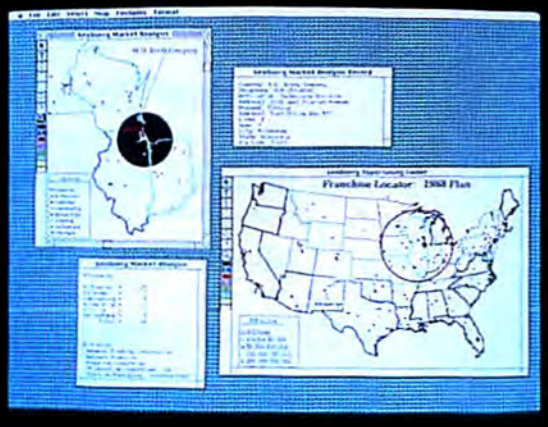
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A New Leaf on Life

Interleaf Publisher is a powerhouse among desktop-publishing programs, but it needs a powerhouse desk (and its unorthodox interface takes some getting used to).

IN MANY RESPECTS *INTERLEAF PUBlisher* 3.0 is the ultimate desktop-publishing program currently available. It does have some negative aspects too, though. First, its hefty price tag ($2495) and system requirements (a souped-up Mac II with hard disk) eliminate it from consideration by all but the highest-end users. Also, its rather unusual user interface may make you want to think twice. And finally, its cavalier attitude toward Adobe fonts may lead to excessive hair pulling and premature graying of whatever's left.

But, if you want features you can only dream about in other page-layout programs and if you want multiuser capabilities, *Interleaf* is unique among the flora and fauna of the desktop-publishing world.

ROOTS

Interleaf was the first "workstation" DTP package to be ported to the Mac II. It's the first salvo in what could turn out to be a barrage of products (such as the forthcoming *FrameMaker* from Frame Technology) originally developed for Apollo, Sun, and DEC workstations.

Interleaf Publisher is based on an earlier Interleaf product called *TPS* (*Technical Publishing Software*) 3.0.

BY GREGORY WASSON



JIM LUDTKE

A New Leaf on Life

TPS processed its first page in 1984 and was used primarily by large corporations, government agencies such as the U.S. Census Bureau, and eventually even the military for use in the heady environment of mainframes and workstations.

In keeping with this background, *Interleaf Publisher* for the Mac is a program of bureaucratic proportions. The size of the packaging itself is intimidating — when I got the package in the mail, I actually thought I'd been sent the hardware by mistake. *Interleaf* is the 1988 hands-down shoo-in (to mix a few metaphors) for *MacUser*'s new "Not-Quite-The-Eddy-Award" category of Muscle Packaging. Lugging this huge box around, I felt like Scrooge's damned partner, Jacob Marley.

The program and related files come compressed on 15 800K disks. A 16th disk houses an installer program that decompresses and allows you to register the software with your name and company. The entire procedure takes 20 to 30 minutes. Returning the enclosed registration card entitles you to two months of free technical support via an 800 number and to notification of upgrades.

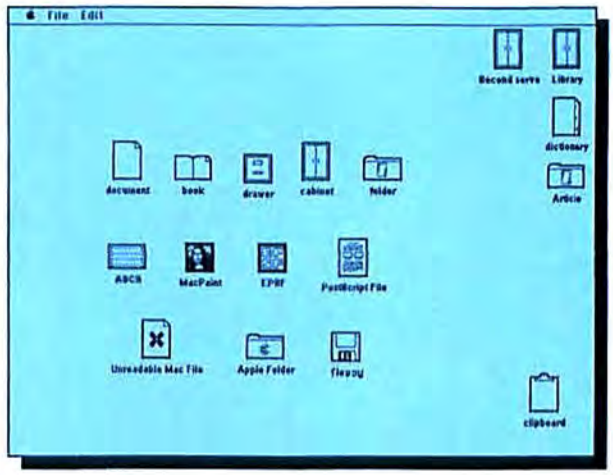


Figure 1
The main desktop of *Interleaf*. It replaces the more familiar Mac desktop and has rules all its own. The various program icons are visible, including the dictionary icon that represents the supplementary dictionary created by the user. Each user's desktop can include one such dictionary with up to 4000 words.

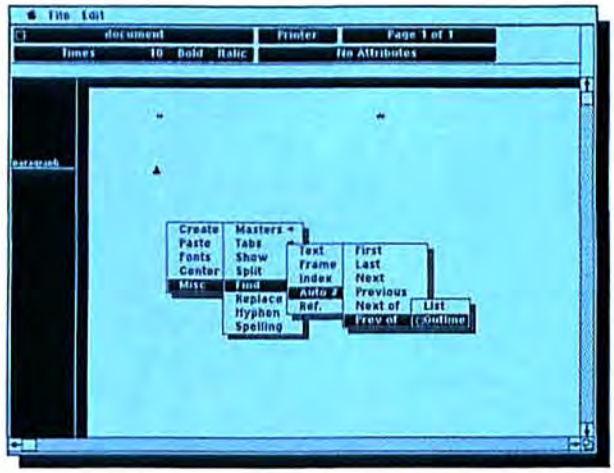


Figure 2
Menus popping up all over! *Interleaf* is one of the first Mac products to make extensive use of the new pop-up menu format.

A gargantuan program needs a gargantuan home: a Mac II with at least 5 megabytes of RAM and a 40-megabyte hard disk (although a company representative said it would "probably" run on a 20-megabyte drive). The configuration I used for this article was a Mac II with 8 megabytes of RAM and a 49-megabyte hard disk with *System* 4.2 and *Finder* 6.0.

THE INTERFACE: DESKTOP DEMENTIA

Once you have finally installed *Interleaf* on your hard disk, the usual double-click sends it on its merry way. But most similarities to the Mac interface end abruptly once you're launched onto the *Interleaf* desktop. And it takes some perseverance before you reach the reward at the end of the rainbow.

Figure 1 shows the desktop with an assortment of the various icons you'll encounter while working with *Interleaf*. One of the program's most attractive features is that multiple desktops are possible: Each user on a network can have his or her own desktop with his or her private files and documents as well as files common to all desktops.

The usual menu bar seems to rule over the desktop as expected, but it functions more as a figurehead because the usual File and Edit menu commands, such as PRINT, SAVE, COPY, CUT, and PASTE, are grayed and useless while *Interleaf* holds court. You can access only a selection named Help — and it only serves to summon forth a rather mediocre on-screen help file for *Interleaf*.

Maybe those familiar-looking icons on the desktop will be easier to use? Nope. Just try to cut one, trash one, paste one, or even move one, relying upon old instincts, habits, and expectations, and nothing happens. Why?

Interleaf uses a different kind of menu that has just recently been publicly sanctioned by Apple and is now beginning to appear in some new products: the pop-up menu. These menus (there are several according to when and where you access them) pop into sight at the cursor location when you press the Command key and hold down the mouse button (see Figure 2). As you move down the menu, the commands are highlighted in turn. As in other Mac applications, releasing the mouse when you select a command implements that command. Pop-up menu items can have submenus (indicated by an arrow to the right of the command) that you access by moving the cursor over the arrow until any additional submenus either telescope in a kind of jagged dance across the screen or pop up on top of one another should you exhaust your screen space. Pop-up menus also tend to remember your last command or series of commands — they're so-called sticky menus, a real time-saver.

THE DOWN SIDE OF POP-UPS

Pop-up menus contain all the usual commands for creating, deleting, and manipulating files. Most Mac users will grow fond of them, but they take some getting used to.

To move an icon, you must first select it by clicking on it once. You can select multiple icons by Shift-clicking or by dragging out a selection box around them in the customary fashion. The Command-key/mouse maneuver described earlier conjures up a pop-up menu, one of whose commands is MOVE. MOVE places the icon into an "animation state," in which only a vague outline is visible.

Then when you move the mouse, the selected icon dogs your movements on the screen. Clicking the mouse again takes the icon out of animation state and locks it into its new position. You must then deselect it through a pop-up command or by clicking elsewhere on the desktop.

Movement is restricted, however, to an icon's current window or the desktop (if it is already there). Want to move a document icon into a folder? You can't just drag it over the folder and drop it in; in fact, technically, you don't even MOVE it. First, you open the target folder by double-clicking on its icon. Then select the icon to be moved into it. Execute a CUT or COPY command from a pop-up menu, move the cursor to the now-open window of the folder, and execute PASTE from yet another pop-up menu. About as elegant as a hippo in tights, right?

And the usual keyboard equivalents of COMMAND-C, -X, and -V? Forget it. There are, however, keyboard equivalents of *Interleaf*'s own devising, listed in an appendix at the end of the reference manual, for many of the word-processing operations. To use them most effectively, though, you really need an extended keyboard.

DOES IT DO WINDOWS?

If several windows are open at once (up to 16 are allowed), they can, of course, overlap. You cannot, however, bring one window to the front simply by clicking on it. You have to move your cursor to that window and execute the FRONT command from a pop-up menu. You can also (if space permits) drag windows around on the screen and resize them (they *do* have size boxes and scroll bars!).

Finally, you might notice the icon labeled Clipboard in the lower-right corner of Figure 1. In *Interleaf* this icon functions as both Clipboard and Trashcan. Whenever you cut or copy something, it ends up here at least temporarily. And here it will remain unless you paste it elsewhere. To empty this ersatz Trashcan, you must open it, select the icons to be trashed, execute PURGE from a pop-up menu, and hope they go away. Occasionally, you will have to delete files at the *Finder* level.

You probably get the idea by now. The interface is different. The terminology is sometimes different, too: A dialog box, for instance, is called a stickup menu. You use the Command-key/mouse combination a lot. Often enough, in fact, to raise the specter of an occupational hazard rampant among *Interleaf* users: Command-key finger — *Interleaf*'s answer to tennis elbow and surfer's knee.

You do get used to — or perhaps resigned to — the eccentricities of the interface, though. You should view *Interleaf*'s form in tandem with its textual and graphic functions. Many of its sins can be forgiven in light of its features for dealing with the organization of both words and images and the processing of large documents. Let's take a look.

FIRST IS THE WORD

Unlike most of the products in the electronic-publishing or DTP market, *Interleaf* includes a word-processing environment that surpasses anything now available in DTP. Up to now, desktop publishers have had to content themselves with the clumsy and sluggish word-processing tools in programs such as *PageMaker* or have had to rely on the usual method of typing the files in a word-processing program such as *Word* or *MacWrite* and then importing them into the page-layout application. *Interleaf* bypasses this step with a full-featured word processor that incorporates hyphenation and justification procedures and a satisfactory, if limited, 80,000-word spelling checker, among other features. The program can also import RTF files from *Word* and text-only files from programs such as *MacWrite*, although some limitations apply here as you'll see later. What's more, it's incredibly fast — good news for anyone who has endured the rigors of entering text directly into other page-layout programs.

Entering text directly within *Interleaf* is straightforward. First you create a document and open it. The document window should be familiar to most Mac users. It is crowned by a document header bar with various items whose menus can be accessed by pressing the Command key and mouse button when the cursor is over the appropriate name. Figure 3 shows the main pull-down menus

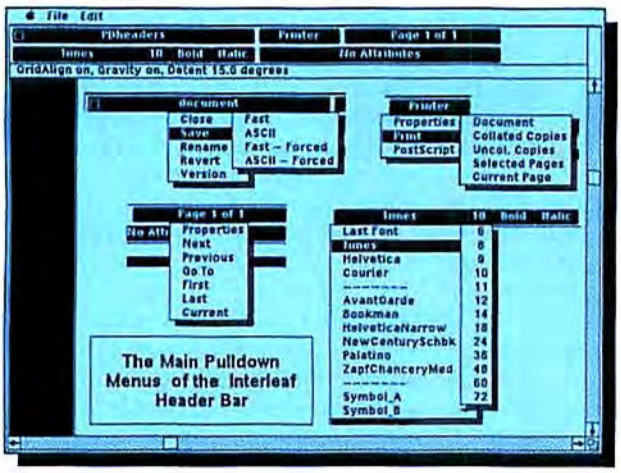


Figure 3
Interleaf **also makes use of the more familiar pull-down menus — the main ones here displayed from the text-editing window. You access them not by pressing on the titles in the header bar but by Command-clicking — another aspect of *Interleaf*'s unusual interface and the result of the program's origins in a three-button mouse world.**

that control font, point size, file manipulation, and printer and save options. Some of the names are different from those Mac users might expect, but they're there. The SAVE command allows you to save the document in *Interleaf* format (Save Fast) and in ASCII, and it even lets you force a save when you haven't made any changes to the document's content (if, for instance, you want to save the file with the cursor at a specific page or at a position different from the previous save).

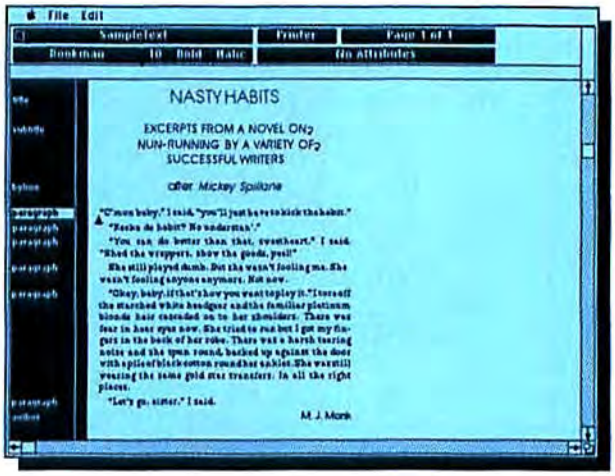


Figure 4
***Interleaf*'s text-editing window, showing the text caret, chevron cursor, and the component bar where much of *Interleaf*'s power is to be found.**

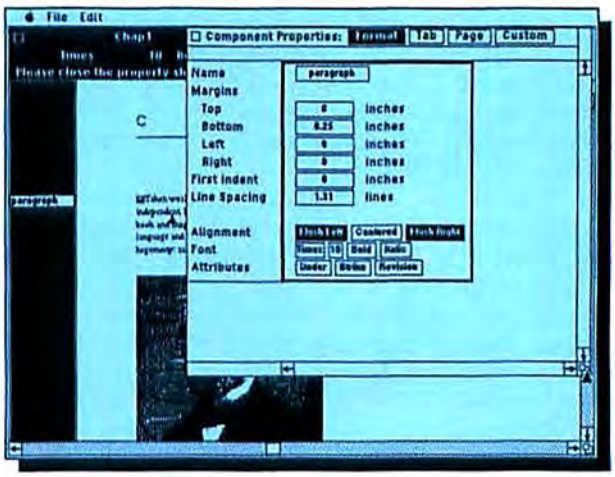


Figure 5
The Component Property Sheet lets you control all aspects of any component. The default measurement unit is the inch (or for line spacing or leading, the line). You can specify measurements in a variety of formats: centimeters, ciceros, picas, points, and the software converts the measurement into inches or lines. You can also enter calculated measurements, e.g., 4 inches X .33, handy when sizing graphics.

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Font sizes are restricted to 13 choices, ranging from 6 to 72 points. Custom sizes (for example, 7 points) are not allowed, but the traditional and usual point sizes generally used in high-quality typesetting are present.

Interleaf does not support Apple's font manager. It uses its own and its own versions of Adobe's PostScript typefaces, which you must copy to your hard disk. You may have all the LaserWriter Plus fonts in your System file, but you must still use *Interleaf*'s versions instead. Downloadable fonts, PostScript or otherwise, are absolutely not supported, so put Garamond aside.

Moreover, Interleaf has completely remapped the keyboard (you're going to have to hunt and peck for "smart" opening and closing typesetting quotes, for example) and has severely pruned Adobe's fonts, stripping most of the foreign-language letters (such as ü), so you can forget about impressing cousin Hans in Germany or sending off company reports in a foreign language. So much for the international appeal of the Macintosh.

Interleaf's font management is, to my mind, its worst shortcoming. The company has effectively crippled the most delightful and progressive aspect of Adobe's fonts. It did this, according to company representatives, to maintain conformity with its workstation products and because it feels its screen fonts are better than Apple's. I don't see it, and besides it's too high a price to pay, even if true.

Text manipulation proceeds pretty much as usual, with some exceptions. When you select a range of text, if you begin to type in new text (expecting to enter a correction), the new text is inserted in front of the selected text — it does not replace it! *Interleaf* has several such variations from the usual Mac interface, and you probably won't like them.

But there are pluses in the *Interleaf* way of processing text that make up for all this. The program automatically repaginates and reformats documents as you enter text — and it does this almost instantaneously. I worked extensively with a 400-page document and it was a pleasure. I've typeset several books with 100+ pages using *PageMaker* or *JustText*. It can be done, but it isn't really worth the hassle.

Interleaf processes a lengthy document as a whole but also concentrates much of its power on what are known as components. Figure 4 shows a sample page. A thick black column at the left of the screen breaks down the text into its components — here defined as title, subtitle, paragraph, and so on. You can define or redefine each component via pop-up Component Property Sheets (see Figure 5), and you can exercise total control over the font, margins, and other attributes. And you can apply all this globally to all components with the same name within a document or even to linked documents (such as the chapters of a book), which makes the often tiresome job of reformatting or editing a 500-page book a snap.

The appearance of each page is affected by the Page Property Sheet (see Figure 6), which you access through a pull-down menu. It includes options for margins; hyphenation control; vertical justification; and even feathering, a relatively obscure (at least among DTPers) procedure that allows stretching leading

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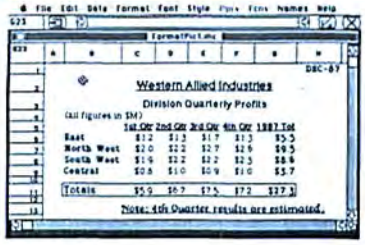
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between lines of a component — a necessary feature for accurate vertical justification of multiple columns on a page. Suprisingly, though, kerning is not supported in this release of *Interleaf.* Why wasn't it there to begin with? Interleaf simply responds that none of its established customers have ever asked for it. That, I suspect, will change.

As I mentioned before, you can import files, but bear this caveat in mind: RTF files from *Word* that contain unsupported characters (remember ü?), styles such as superscript (*Interleaf* does footnotes, but bizarrely, does not do superscript numbers), or non-LaserWriter Plus fonts can cause problems. Several such files I tried to import either elicited a message from *Interleaf* that the import procedure had been aborted or resulted in an *Interleaf* file that contained blanks where the offending item had been in the original file.

One of *Interleaf*'s glories is its auto-numbering feature. You can insert numbers referring to footnotes, illustrations, and outline items through a menu, and *Interleaf* automatically updates them all when you insert new material or change the position of existing references — even across multichapter files that have been linked in what is known as a book directory. Auto-referencing is a further enhancement to this feature. The software can also generate fully editable indexes and tables of contents.

You can create templates for document styles and place them in what is called the Create Cabinet. Thereafter, you can call up the template via a menu command. Most impressively, you can also devise graphic templates (to create a uniform illustration format, for instance) — a feature not available in any other Mac publishing software. The package provides several ready-made templates for frames, reports, newsletters, and books.

PICTURE THIS

Interleaf, priding itself on being a fully integrated publishing tool, supplies a *MacDraw*-like drawing environment. You create graphics by first selecting a comfy spot on the page — a graphic frame (à la *Ready, Set, Go!*) — and then by using *Interleaf*'s formidable drawing tools, which support isometric projection for all you 3D fans. The usual options for rotation, fill, line width, snap-to-grid, snap-to-object, and so on are all present and accounted for, albeit through a pop-up menu rather than a toolbox as in most drawing programs. The program also comes with an impressive array of "click art" (see Figure 7), which includes graphic enhancements (*Interleaf* does not support Zapf Dingbats, alas), maps, display letters, and various shapes that you can copy, paste, and edit within documents.

The most useful feature of *Interleaf*'s graphic frames is that you can anchor them to words, text, paragraphs, pages, or positions on a page. Anyone who has had to revise a document in any of the DTP products for the Mac knows what a boon this is. No longer do you have to replace illustrations or graphics whose related text has suddenly flowed onto another page or to another location. You can cement the relationship between the two with user-defined anchors.

Interleaf's graphic frames can also embrace inserted text (such as captions or legends) in the form of microdocuments or text strings, which as components can be fully edited, formatted, and even spell-checked. Figure 8 shows a graphic frame (the portion of the page enclosed in a gray-lined box) with such text additions.

Interleaf also includes an awkward paint-style environment, and freehand drawing is possible, but why bother? You can import Paint files (and edit them somewhat clumsily) via a special pop-up Edit window. Imported Encapsulated PostScript File (EPSF) images (which you cannot edit) appear as a gray box on the

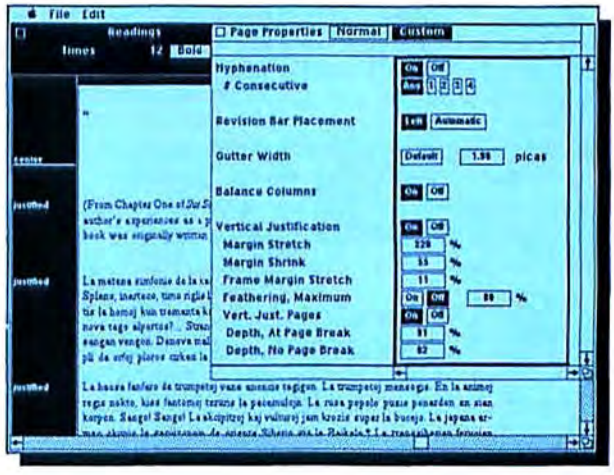


Figure 6
Like components, pages also can be controlled by a Property Sheet: options for margins, number of columns, hyphenation, vertical justification, and so on are all here.

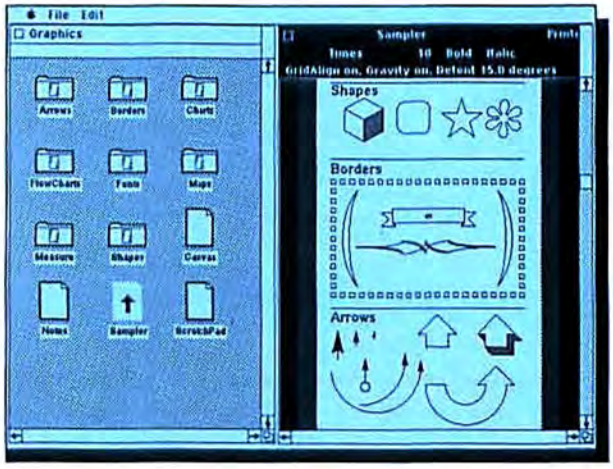


Figure 7
***Interleaf* comes complete with an extensive collection of "click art." A sampler contains examples of most of what is available.**



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screen but print out fine. The documentation warns that *Cricket Draw* 1.0 EPSF files are not supported, but I imported *Cricket Draw* 1.1 EPSF files without incident. You can also bring in TIFF and PICT formatted files. *MacPaint* and TIFF files must have the extension .img added to their name (do this at the *Finder* level) for *Interleaf* to recognize them. Likewise, EPSF files must have the extension .eps tacked on (Big Blue rears its ugly head!).

Unfortunately, there are no rulers within frames (or within text documents for that matter), but *Interleaf* supplies some nonprinting graphic rulers (in inches, centimeters, and picas) that you can copy and paste in frames — not the best way to do it, but at least it's possible. The rulers also demonstrate another powerful feature of *Interleaf:* its ability to set "locks" on almost any conceivable aspect of a graphic (see Figure 9). This provides a way to place nonprinting guides on a page or to protect an object from being cut.

It's easy to generate a wide variety of graphs and charts by entering data (or importing it from a spreadsheet) via a special pop-up menu (see Figure 10). Like other graphics, charts are placed in frames.

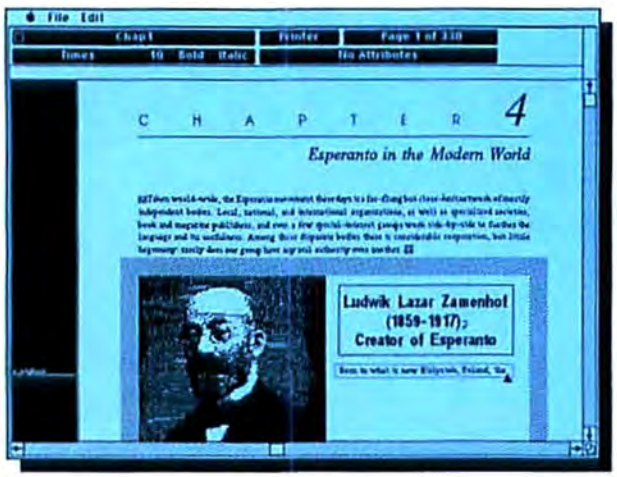


Figure 8
Unlike other electronic publishing programs, *Interleaf* allows the insertion of fully editable text into graphics. Text placed in graphic frames retains its ability to be reformatted via the Component Property Sheet and can even be spell-checked. Here, two examples of "microdocument" text are shown within a graphic frame.

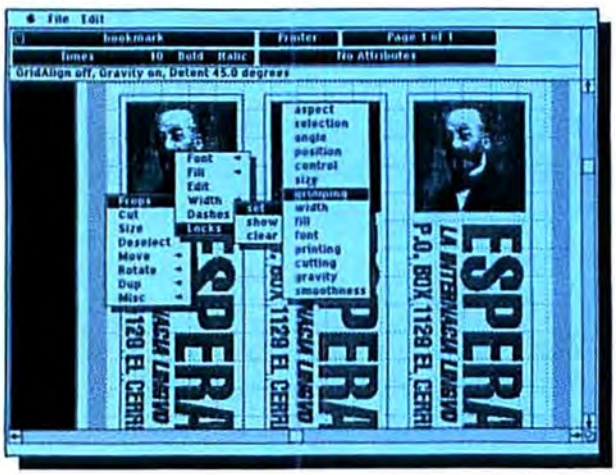


Figure 9
Lock 'em up! Almost any aspect of a graphic object can be locked in some way — a wonderful feature that lets you protect your work against accidental changes.

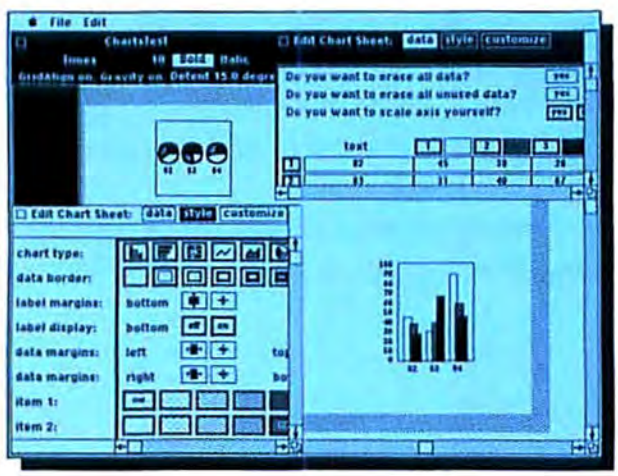


Figure 10
***Interleaf* can generate and control the appearance of charts and graphs. You can enter data directly or import it from another program, such as a spreadsheet. Charts, once placed in a graphic frame, remain fully editable from the Edit Chart Sheet.**

ACCIDENTAL INCIDENTALS

Interleaf Publisher has some unusual techniques for dealing with PostScript files. An option from the Print menu in the document editing window lets you print PostScript files to disk rather than send them to the printer. The manual explains: "This can be useful in conjunction with other applications that allow you to manipulate PostScript files." You would expect this file to be ASCII and readable as text only by *MacWrite* and *Word* or downloadable by Adobe's *SendPS*. The problem is that once you go back to the *Finder*, the file steadfastly refuses to divulge its secrets. There is a work-around (although the manual doesn't tell you about it): Start up a file utility such as *ResEdit* or *Hard Disk Util* (with its Set FileInfo feature) and change the file type to TEXT. Return to the Mac desktop, and you'll find that you can now open up the document with *MacWrite* or *Word*. Not only will you be rewarded with the PostScript description of your document but you'll also have the chance to poke around in the *Interleaf* PostScript prologue.

I've already mentioned the manuals — or rather their size. They are beautiful and are generally well put together. They include a large volume with two sets of tutorials, an installation guide, a user-interface guide, a reference manual, and a condensed reference guide. The tutorial

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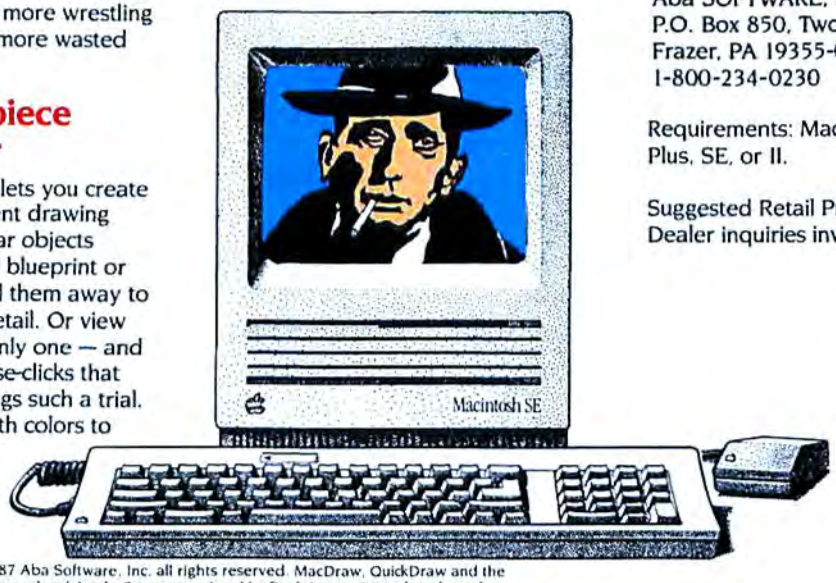
Only "Draw It Again, Sam" lets you create and use up to ten transparent drawing planes. You can group similar objects together, as an architectural blueprint or an anatomical drawing. Peel them away to reveal layer after layer of detail. Or view them all while working on only one — and avoid those accidental mouse-clicks that make doing detailed drawings such a trial. Use layers in conjunction with colors to produce spot color separations with ease or extend a single drawing into an animated series. You can even import a drawing and work over it or behind it without touching the original. Save or print the drawing layer-by-layer or as a whole. The possibilities are endless!

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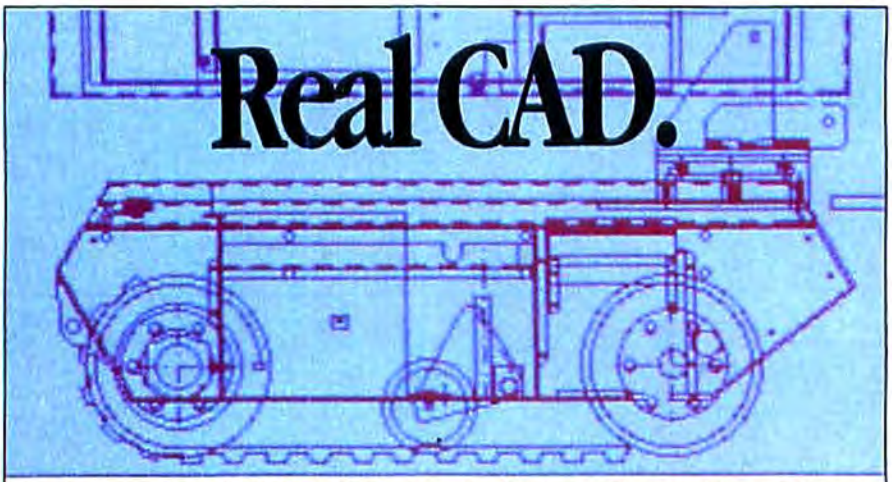
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A New Leaf on Life

volume includes an ironic mistake in the table of contents: All the page numbers for Chapter 6 are wrong — an embarrassing error in light of *Interleaf*'s boasts about its automatic table of contents generation and auto-numbering abilities! The manuals, by the way, were not produced with the Mac version but with the Sun workstation product — this became clear when I spotted superscripts in one section — something that cannot be done with the Mac software.

I called technical support and found the individual I conversed with friendly, warm, and willing to help, even though I called with five or six questions. When he couldn't immediately supply me with one or two of the answers to my problems, he promised to find out and call back. He did so within minutes, and he didn't know I was a reviewer. A rather disappointing aspect of technical support, though, was that the staff generally do not seem to be very familiar with Mac hardware and software — for example, the people I spoke to had not heard of *ThunderScan* or *ResEdit*.

FORM AND FUNCTION

The Mac interface is not a sacred cow. It could stand just a tiny bit of improvement — let's admit it. But *Interleaf*'s interface is *definitely* not an improvement. I found it most amusing to hear *Interleaf*'s representatives at the 1988 Macworld Expo in San Francisco spouting company-line gibberish such as: "We feel most of the differences between the *Interleaf* interface and the Mac's are enhancements." But then, with the very next breath, they said that in the next release of *Interleaf Publisher*, the interface would turn over a new leaf and adhere more closely to the Mac interface. Which is it, folks?

What's most exasperating about this sort of double-talk is that it really isn't necessary. *Interleaf Publisher* is an outstanding and welcome addition to the Mac and to the world of electronic publishing. Period. This statement is not meant to whitewash its shortcomings. It lacks many of the interface amenities now expected of Mac publishing software, but

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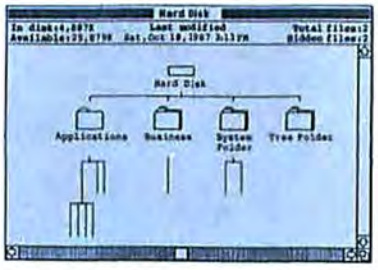
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A New Leaf on Life

sometimes functionality is more important than form. If it is the only or best tool for the job, you use it. *Interleaf*'s only real competitor at present for processing long documents on the Mac is *TeXtures* or *MacTeX*, but most people will prefer *Interleaf*, warts and all, over the code-driven TeX typesetting language.

Interleaf is not for the small-time desktop publisher (who couldn't afford it and the necessary hardware in the first place). But it will undoubtedly find a niche in the corporate world as an inexpensive alternative to the more costly workstation *TPS* version, and it will help guarantee and enhance the Mac II's visibility among the gray-flannel set. It has the potential to be a top-notch Mac product, as soon as Interleaf releases it from the constraints of an inferior and disappointing interface.

GREGORY WASSON IS A FREE-LANCE DESKTOP PUBLISHING TYPESETTER WHO LIVES ON A MOUNTAINTOP NEAR SANTA CRUZ, CALIFORNIA. WASSON DID GRADUATE WORK IN GREEK AND LATIN IN CANADA AT THE UNIVERSITY OF TORONTO.

MACUSER RATING

Interleaf Publisher 3.0

★★★½

Follows Mac Interface	■ □ □ □ □
Printed Documentation	■ ■ ■ ■ □
On-Screen Help	■ ■ □ □ □
Performance	■ ■ ■ ■ □
Support	■ ■ ■ □ □
Consumer Value	■ ■ ■ ■ □

Comments: High-end software for electronic publishing. Multiuser capabilities make it ideal for companies with editorial staffs responsible for the production of large, multivolume documents, such as books and catalogs. **Best Features:** Strong global formatting abilities; speed; and an integrated approach that combines word processing, graphics, and chart generation in one package. **Worst Features:** The user interface, the brutal crippling of Adobe's typefaces, and the inability to use downloadable fonts. These problems prevent the program from receiving the five-mice rating it could easily deserve. **List Price:** $2495. Published by Interleaf, Ten Canal Park, Cambridge, MA 02141. (617) 577-9800. Requires a Mac II with at least 5 megabytes of RAM and a 40-megabyte hard disk. Not copy-protected.

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Pick a Peck of Pixel Palettes

A year after its release, the Mac II finally has the tools to take advantage of those 16.8 million colors.

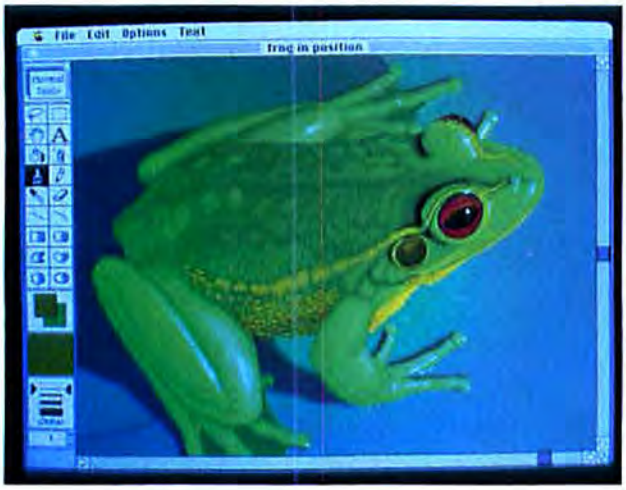
WHEN APPLE UNVEILED THE MACINTOSH II, it turned more than a few heads with the machine's color capability. Such stunning high-resolution graphics had hitherto been available only on much more expensive workstations. Mac enthusiasts were eager to get their hands on the new hardware, to gaze with their own eyes upon this wonderful new world of color.

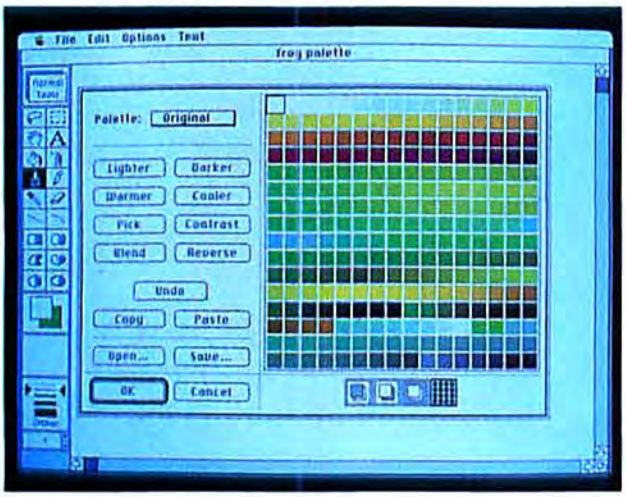


BY HENRY BORTMAN


11:19
File Edit Options Text
Copy of Pixel Brush-1
Normal tools

Pick a Peck of Pixel Palettes





A portion of one of the images from the *PixelPaint* art disks and the Palette dialog showing the palette used to create it. The artist used *PixelPaint*'s palette-editing tools to create several custom blends of various shades of green.

The business community, desktop publishers, and graphic artists took a more sober approach. "Impressive," they said. "Where's the software?" The answer at the time was, "Uh, well, there isn't any yet."

Times have changed. And SuperMac's *PixelPaint* is a prime agent of that change. Written by Jerry Harris and Keith McGreggor of Pixel Resources, *PixelPaint* is unquestionably a brilliant piece of programming. The more important question is: Who will use it? Its price tag ($495) and the even more expensive hardware platform required to run it limits its use to those on the highest end of the Macintosh market initially. But those early adopters who take the plunge will find a powerful graphics tool at their fingertips.

THE COLOR PALETTE

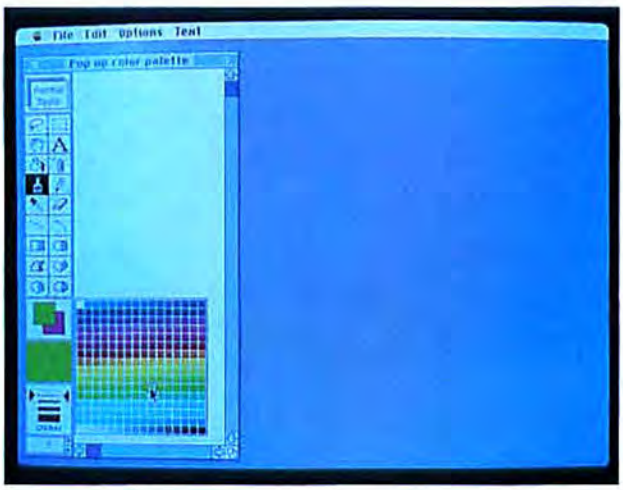
As you may already know, with an 8-bit video card, a Mac II can display 256 colors at one time. The Apple system comes with a standard table of 256 colors, representative of the 16 million or so colors possible. But what if you don't like the 256 that Apple chose? What if you want to assign half of the 256 colors available to you to a subtle range of shades from burgundy to lavender?

PixelPaint lets you do it. You can assign any color of your choice from among the pool of 16 million to any one of the 256 positions in the Color Palette. (Actually, you only get to pick 254 — white and black are fixed.) *PixelPaint* comes with several predefined palettes, but these are only a starting point. You can customize to your heart's desire, selecting precisely those colors you need to create your image.

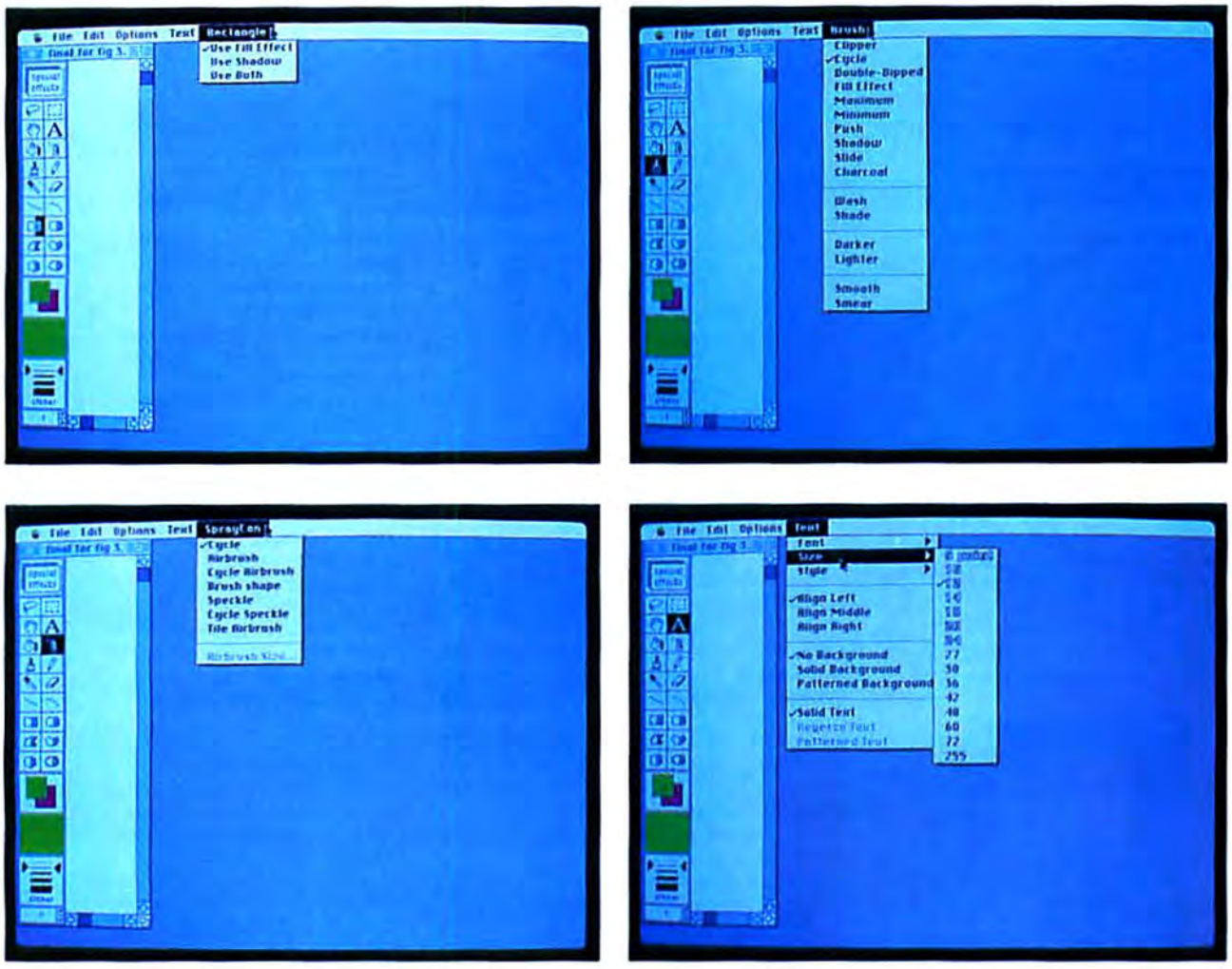
The painting of a frog shown here uses a highly specialized palette built specifically for this drawing. Notice that there are several different ranges of green.

The authors have clearly given some thought to the palette's user interface. The program allows you to select foreground, blend, and background colors. The foreground color is used by the normal painting tools. The blend color affects the operation of the tools when you're in Special Effects mode (more on that later). And the background color determines the background for patterns; certain special effects with text; and the color that gets left behind when you cut, delete, or erase part of your image.

Within the Toolbox are four squares of color. Three are for picking the foreground, blend, and background colors. Clicking and holding down the mouse button on any of these three choices brings a minia-



The *PixelPaint* Tool Palette. Clicking on one of the colored squares at the bottom of the Tool Palette causes the Color Palette to pop up on the screen for easy color selection. With this method you can select foreground, background, and blend colors and a fill pattern.



When in Special Effects mode, each tool acquires new capabilities and each has its own special Effects menu. Shown here are the Rectangle, Brush, SprayCan, and Text menus. Some of these menus — like the Text menu — have sub-menus with additional choices and options.

ture copy of the current file's palette to the screen. The color of the square you clicked on is automatically selected. You can drag to any other color within the palette to select a new foreground, blend, or background color.

The Dropper tool, when clicked anywhere in your image, picks up the color of the pixel you click on and makes it the foreground color. You can also select a new foreground color — from anywhere in your painting — by pressing Command-Option and clicking the mouse. The Color Palette will pop up.

The fourth color square on the Toolbox is the Pattern Selector, which works in a similar manner to the other three, giving you a choice of 144 patterns.

My favorite palette changer is BLEND which creates a smooth gradation between one color and another.

You can modify the Color Palette with the Palette dialog. Serious *PixelPaint* users will find themselves spending a great deal of time here. When you double-click on any of the 256 squares of color, you get the Apple System Color Picker. The color you select replaces the color on which you double-clicked.

You can cut and paste colors from one location in the palette to another. *PixelPaint* also allows you to modify a range of colors within the palette or the entire palette. You can lighten or darken any color(s) you select, make them redder (with the WARM button), make them bluer (with the COOL button), or complement them (with the CONTRAST button). My favorite palette changer is BLEND, which creates a smooth gradation betweeen one color and another. You can use as few or as many palette positions as you like for a blend. The more you use, the more subtle your blend will be — but the fewer palette positions you'll have left for other colors.

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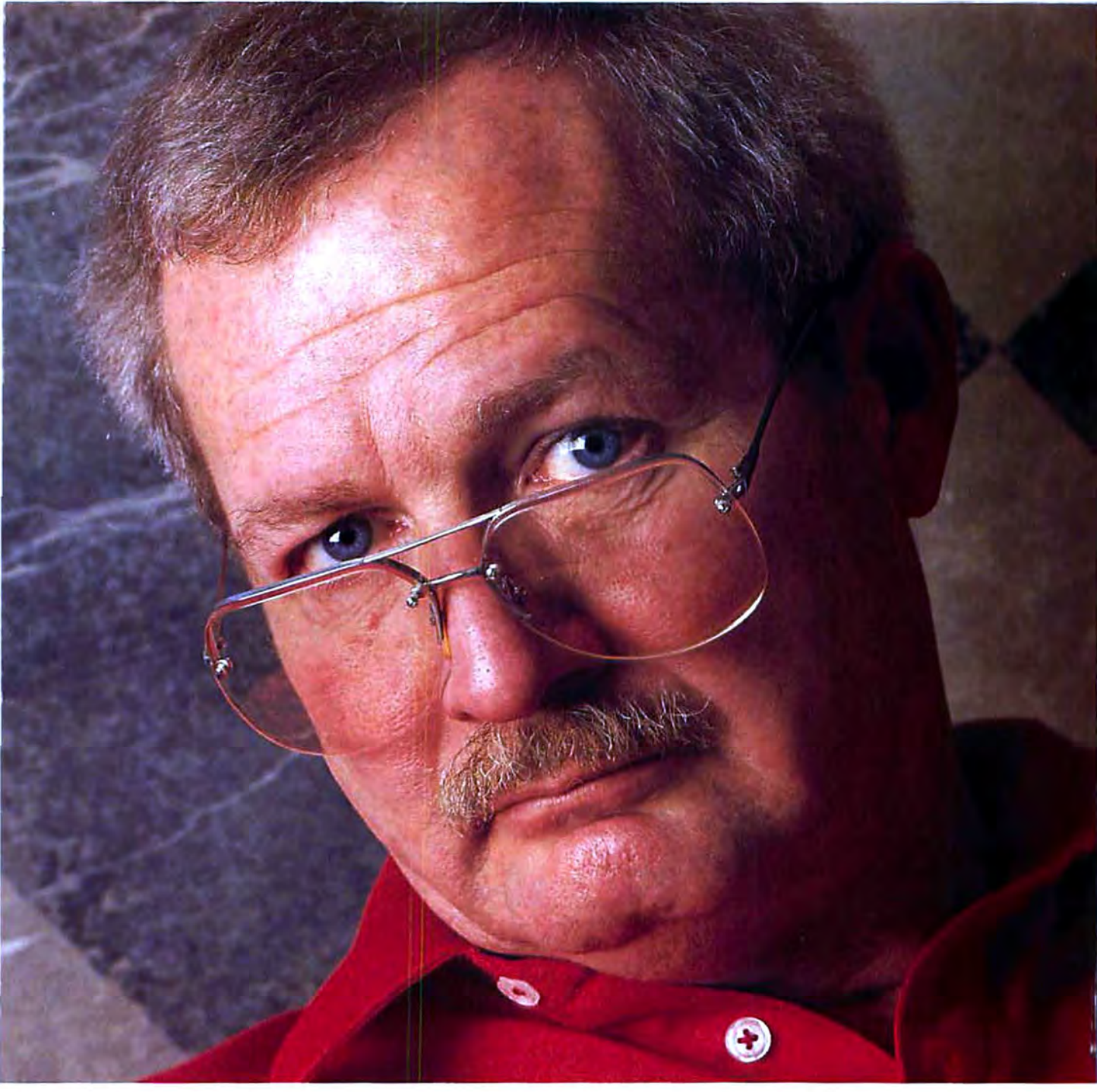
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Spellswell Legal or Medical Dictionary .... 56.

GAMES

Accolade ... CP
Hardball *(baseball simulation)* ..... 23.
Activision ... CP
Tass Times in Tonetown ..... 21.
Shanghai *(Mah Jongg strategy)* ..... 24.
Portal *(sci-fi novel)* ..... 30.
Addison-Wesley ... CP
Puppy Love *(you and your dog will love it!)* 19.
Ann Arbor ... CP
Grid Wars *(3D arcade)* ..... special
Normally $22. Free w/purchase of FullPaint.
Avalon Hill ... CP
MacPro Football *(req. 1 Meg)* ..... 28.
MacPro Football 85 Team or Season ..... 16.
Baudville ... CP
Guitar Wizard *(learning tool for guitar)* .... 22.
Ted Bear's Rainy Day Games ..... 22.
Blue Chip ... CP
Millionaire *(stock market)* ..... 35.
Broderbund Software ... CP
Lode Runner *(over 150 levels)* ..... 24.
Ultima III *(fantasy adventure)* ..... 24.
Ancient Art of War *(military strategy)* ..... 27.
Toy Shop *(create working models)* ..... 30.
Bullseye ... CP
Ferrari Grand Prix *(Formula One racing)* ... 32.
Fokker TriPlane Flight Simulator ..... 32.
Electronic Arts ... CP
Skyfox, Pinball Construction Set, Dr J vs Larry Bird, Archon ..... *each* 15.
Ogre *(tank simulation)* ..... 20.
Patton vs Rommel or Scrabble ..... 27.
Chessmaster 2000 ..... 28.
Epyx ... CP
Sub Battle Simulator *(NCP)* ..... 24.
Winter Games *(Olympic events)* ..... 24.
Greene, Inc. ... NCP
Crystal Quest *(color arcade on Mac II)* .... 24.
Hayden Software ... CP
Perplexx *(scrabble-type game)* ..... 24.
Sargon III *(9 levels of chess)* ..... 29.
Infinity Software ... CP
Go *(4000-year-old strategy game)* ..... 27.
Grand Slam *(tennis, req. 512k)* ..... 27.
Infocom ... CP
Leather Goddesses, Nord & Bert, Bureaucracy, Hollywood Hyjinx, Lurking Horror, Plundered Hearts, Borderzone, Stationfall ..... *each* 24.
Beyond Zork ..... 30.
Classic Mystery Library: Moonmist, Suspect, & Witness ..... 36.
Science Fiction Classics: Hitchhiker's, Planetfall, & A Mind Forever Voyaging .... 36.
Zork Trilogy ..... 42.
Invisiclues Hint Booklets *(please specify)* ... 6.



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Hayden Software ... CP
Score Improvement for the SAT ..... 58.
Hayes ... NCP
Smartcom II *(communications)* ..... 88.
Ideaform ... NCP
MacLabeler or DiskQuick ..... 27.
201 Quicklabels ..... 18.
HyperBook Maker *(print stacks into book)* .. 42.
Imagine ... NCP
Smart Alarms *(DA reminder system)* ..... 35.
Multi-user Appointment Diary ..... 89.
Infosphere ... CP
LaserServe *(network software)* ..... 62.
ComServe *(NCP, modem sharer)* ..... 124.
MacServe *(network software)* ..... 159.
Innovative Data Design ... NCP
MacDraft 1.2A *(requires 512k)* ..... 149.
Kent Marsh Ltd.
The NightWatch *(hard disk security)* ..... call
MacSafe *(advanced security program)* .... call
LaserWare ... CP
LaserWorks *(requires 512k, LaserWriter)* ... 189.
LaserPaint *(requires Mac Plus)* ..... 314.
LaserPaint Color II *(256 gray scales, supports 256 Pantone & 8 Bit color; NCP)* ..... 379.
Layered ... CP
Notes for...Excel or Microsoft Works ..... 40.
Notes for...PageMaker or Ready,Set,Go!3 .. 40.
Notes for...Microsoft Word ..... 40.
Learning Company ... CP
Reader Rabbit *(ages 7-12)* ..... 39.
Legisoft/Nolo Press ... NCP
WillMaker 2.0 *(prepare your own will)* ..... 29.
Letraset ... NCP
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Ready,Set,Go! 4.0 *(page layout)* ..... 279.
Linguist's Software ... NCP
Tech *(1000 different symbols)* ..... 59.
LaserTech ..... 79.
FOREIGN LANGUAGE FONTS
SuperFrench/German/Spanish ..... 39.
MacKana/Basic Kanji ..... 39.
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MacHindi Sanskrit *(Amjer)* ..... 59.
MacSemitic/Coptic/Devanagari, MacKorean, MacThai, MacGreek, MacHieroglyphics ... 59.
MacArmenian, MacGeorgian, MacCyrillic, MacArabic/Farsi, MacAkkadian .... *each* $59.
MacHebrew Scriptures ..... 79.
MacGreek New or Old Testament ..... 79.
MacChinese *(supplements available)* ..... 79.
MacGreek/Hebrew/Phonetics ..... 89.
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LaserFrench/German/Spanish ..... 79.
LaserGreek or LaserHebrew ..... 79.
LaserTransliterator ..... 79.
LaserKorean ..... 89.
LaserCyrillic ..... 115.
Living Videotext ... NCP
More 1.1C *(outlines, windows, & tree charts)* 175.
Lundeen & Associates ... NCP
WorksPlus Spell *(spell checker for Works)* ... 46.
WorksPlus Command *(macros for Works)* .. 61.
MacroMind ... NCP
VideoWorks II *(animation tool)* ..... 118.
MacroPac International ... NCP
101 Macros for Excel ..... 44.
Micro Analyst ... NCP
Mac Zap *(recover crashed hard disks)* ..... 39.
MECA ... NCP
Managing Your Money *(finance)* ..... 129.
Microlytics ... NCP
Word Finder *(synonym finder)* ..... 37.
Microsoft ... NCP
Basic Interpreter 3.0 ..... 61.
Chart 1.02 *(42 chart styles, CP)* ..... 72.
Microsoft Write 1.0 *(w/spell checker)* ..... 109.
Multiplan 1.1 ..... 110.
File 1.05 ..... 110.
Basic Compiler 1.0 ..... 119.
Fortran 2.2 *(compiler)* ..... 169.
Works 1.1 *(integrated tool)* ..... 185.
Microsoft Mail *(up to four users)* ..... 195.
Microsoft Mail *(up to 10 users)* ..... 339.
Microsoft Mail *(up to 20 users)* ..... 525.
Excel 1.06 *(power spreadsheet)* ..... 239.
Word 3.01 *(powerful word processor)* ..... 239.
PowerPoint *(presentations)* ..... 239.*
Migent ... NCP
In House Accountant *(small business)* .... 119.
Miles Computing ... NCP
Mac the Ripper Vol. 3 *(req. Paint program)* .. 27.
Orchestra of Fonts Vol. 4 *(30 different fonts)* 27.
Peoples, Places & Things Vol. 5 ..... 27.
Mindscape ... NCP
The Perfect Score: SAT *(CP)* ..... 46.
ComicWorks *(create your own comics)* .... 47.
GraphicWorks 1.1 *(newsletters & posters)* .. 85.
Monogram ... NCP
Forecast *(tax planning)* ..... 40.
Dollars & Sense *(home, small business)* .... 81.
Business Sense *(full-featured)* ..... 282.
Nantucket ... NCP
McMax *(dBASE III compatible)* ..... 179.
Nashoba Systems ... NCP
FileMaker Plus *(feature-packed database)* 149.
North Edge Software ... NCP
Timeslips III *(time & expense tracking)* .... 119.
Odesta ... NCP
Double Helix II *(relational, custom menus)* 339.
Olduvai Software ... NCP
DA-Switcher *(unlimited desk accessories)* .. 25.
Post ART *(clip art, 3 disk set)* ..... 35.
Icon-It! *(create custom icon bars)* ..... 39.
FontShare *(share PostScript® fonts)* ..... 159.
Read-It!TS *(OCR software for Thunderscan)* 79.
Read-It! *(300 dpi OCR software)* ..... 199.
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WordPlay *(crossword puzzles)* ..... 26.
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inTalk *(communication to emulation, NCP)* 119.
Passport Designs ... CP
Mastertracks Pro *(music editor)* ..... 259.
PBI Software ... NCP
HFS Locater Plus *(DA organizer for HFS)* ... 26.
Personal Computer Peripherals ... NCP
HFS Backup ..... 28.
ProVUE Development ... NCP
OverVUE 2.1 *(power-packed database)* ... 149.



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BulkMailer Plus *(up to 90,000 names)* .... 195.
Legal Billing *(attorneys to accountants)* ... 369.
Legal Billing II *(full trust accounting)* ..... 549.
Project Billing *(architects to engineers)* .... 439.
Silicon Beach Software ... NCP
Silicon Press *(printer utility, 512k)* ..... 41.
World Builder *(program creator)* ..... 41.
SuperPaint *(advanced graphics program)* .. 79.
Simon & Schuster ... NCP
Typing Tutor IV *(typing instruction)* ..... 35.
SoftStyle ... NCP
Epstart *(Epson printer driver)* ..... 27.
Laserstart *(Hewlett-Packard Laserjet)* ..... 58.
Printworks for the Mac *(Dot Matrix)* ..... 43.
Printworks for the Mac *(Laser printers)* ..... 85.
SoftView ... NCP
MacInUse *(time-use manager)* ..... 42.
TaxView Planner 1987-1991 ..... 49.
MacInTax *(the complete tax program!)* ..... 65.
Software Discoveries ... NCP
Merge Write *(MacWrite mail merge)* ..... 35.
Record Holder Plus *(data manager)* ..... 45.
Software Supply ... NCP
Suitcase *(font and DA utility)* ..... 37.
PowerStation *(alternative to Finder)* ..... 37.
Software Ventures ... NCP
Microphone 1.1 *(includes Glue™)* ..... 119.
Microphone II *(MultiFinder compatible)* ... 229.

Disks to Drives.

MacroMind ... NCP
Mazewars+ *(play via modem or network)* $31.
Microsoft ... CP
Flight Simulator *(the Mac takes flight)* . . . . . 32.
Micro Sports ... CP
MSFL Pro League Football . . . . . 32.
Miles Computing ... CP
Down Hill Racer *(3D ski simulation)* . . . . . 24.
Harrier Strike Mission II . . . . . 27.
Fool's Errand *(optional hint booklet avail.)* 27.
Mindscape ... CP
Crossword Magic . . . . . 30.
Balance of Power *(world politics)* . . . . . 30.
King of Chicago *(req. minimum 512E)* . . . . 30.
Shadowgate *(castle adventure)* . . . . . 30.
Uninvited *(mystery adventure)* . . . . . 30.
Deja Vu: A Nightmare Comes True . . . . . 30.



Olduvai Software ... NCP
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Trust & Betrayal: The Legacy of Siboot . . . . 30.
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Olduvai Software ... NCP
Maze Survival *(action game)* . . . . . 21.
PBI Software ... CP
Strategic Conquest *(multi-user)* . . . . . 35.
Primera Software ... CP
Smash Hit Racquetball *(top-rated!)* . . . . . 15.
Smash Hit Racquetball II . . . . . 22.
Psion ... CP
Psion Chess *(3D and multi-lingual)* . . . . . 31.
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Leisure Suit Larry *(swinging single life)* . . . . 23.
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Silicon Beach Software ... NCP
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Beyond Dark Castle *(the wait is over!)* . . . . 27.
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Sir-Tech ... CP
Mac Wizardry *(high-rated fantasy)* . . . . . 35.
SPHERE, Inc. ... NCP
Tellstar II *(No. & So. hemispheres)* . . . . . 15.
GATO *(submarine simulator)* . . . . . 26.
Orbiter *(space shuttle simulation)* . . . . . 26.
Falcon *(F-16 flight simulation)* . . . . . 26.
XOR ... NCP
NFL Challenge *(w/illustrated handbook)* . . . 64.

HARDWARE

Manufacturer's minimum limited warranty period is listed after each company name. Some products in their line may have longer warranty periods.

Apricorn ... 1 year
ApriCord Mac *(parallel converter)* . . . . . 75.
AST Research ... 6 months
Mac 286 *(MS-DOS on your Mac II)* . . . . . 1079.
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AST TurboScan Flatbed . . . . . 1369.
AST TurboLaser P/S . . . . . 3395.
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SURGE SUPPRESSORS
Safestrip *(6 outlets)* . . . . . 21.
Diamond *(6 outlets)* . . . . . 32.
Emerald *(6 outlets; 6 ft cord)* . . . . . 36.
Sapphire *(3 outlets; EMI/RFI filtered)* . . . . . 47.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)* . 59.
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Dove Computer ... 90 days
Toolkit *(clamp, torx driver & wrist strap)* . . . . 15.
SCSI Interface/Port . . . . . 85.
MacSnap 524E *(512E to 1 Meg)* . . . . . 156.
MacSnap 524 *(512k to 1 Meg)* . . . . . 175.
MacSnap 524S *(512E to 1 Meg w/SCSI)* . . . 219.
MacSnap 548E *(512E to 2 Meg)* . . . . . 389.
MacSnap 548 *(512k to 2 Meg)* . . . . . 399.
MacSnap 548S *(512E to 2 Meg w/SCSI)* . . . 449.
MacSnap 2S *(1 Meg to 2.5 Meg)* . . . . . 489.
MacSnap 4S *(1 Meg to 4 Meg)* . . . . . 969.
MacSnap 8S *(for Mac II, to 8 Meg)* . . . . . 1939.
MacSnap Plus 2 *(MacPlus to 2 Meg)* . . . . . 289.
MacSnap Plus 2H *(MacPlus/SE to 2.5 Meg)* 489.
MacSnap Plus 4H *(Plus/SE/II to 4 Meg)* . . . 969.
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Model MSE 3 *(MSE 1 with math co-processor)* . . . . . 779.
Model MSE 4 *(MSE 1 with 1 Meg & math co-processor)* . . . . . 975.
1024 Option *(1 Meg accelerator or Mac II memory expansion)* . . . . . 195.
Math Kit *(math co-processor chip set)* . . . . 225.
Ergotron ... 1 year
Mouse Cleaner 360° . . . . . 15.
MacTilt or MacTilt SE . . . . . 68.
MacTilt *(for large monitor)* . . . . . 85.
Farallon Computing ... 1 year
PhoneNET-AppleTalk 120 . . . . . 9.
PhoneNET PLUS *(DB-9 or DIN-8)* . . . . . 44.
PhoneNET StarController™ w/StarCommand™ software . . . . . 1395.
PhoneNET StarController™ Wiring Kit: Punch Down Block . . . . . 69.
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TrafficWatch *(monitor network)* . . . . . 159.
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Smartmodem 2400 . . . . . 449.
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Mouseway *(mouse pad)* . . . . . 8.
Mouse Pocket *(for your idle mouse)* . . . . . 8.
Mouse Pocket *(ADB)* . . . . . 8.
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Printer Muffler *(132 column)* . . . . . 50.
Printer Muffler Stand *(80 column)* . . . . . 25.
Control Center . . . . . 62.
A-B Box *(for the Mac Plus)* . . . . . 64.
System Saver Mac . . . . . 64.
Turbo Mouse *(for the MacPlus & SE)* . . . . . 82.

Koala Technologies ... 90 days
MacVision 2.0 *(digitizer)* . . . . . 225.

Kraft Systems ... 1 year
3-Button QuickStick . . . . . 39.

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Pocket Modem *(ext. 300/1200 baud)* . . . . 168.

Mirror Technologies ... 1 year
Magnum 800 External Drive *(platinum)* . . 199.
MagNet 30x *(w/cable & print spoolers)* . . 699.
MagNet 40x *(w/cable & print spoolers)* . . 859.
Magnet 40/40 *(40 Meg/40 Meg tape)* . . . 1769.
Magnum Tape 40 Backup . . . . . call

MSC Technologies ... lifetime
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A+ Mouse ADB *(for Mac SE & II)* . . . . . 87.

Nutmeg Systems ... 90 days
Nutmeg 15" Monitor *(for MacPlus or SE)* 1295.
Nutmeg 15" Monitor *(for Mac II)* . . . . . 1395.
Nutmeg 19" Monitor *(for MacPlus or SE)* 1495.
Nutmeg 19" Monitor *(for Mac II)* . . . . . 1595.

Nuvotech
EasyNet/AppleTalk cable . . . . . 6.
TurboNet *(DIN8 or DB9 connector)* . . . . . 28.

Orange Micro ... 1 year
Grappler *(universal parallel interface)* . . . . . 64.

Passport Designs ... 90 days
Passport MIDI Interface . . . . . 95.

Personal Computer Peripherals ... 2 years
WSI *(connects Apple HD 20 to SCSI)* . . . . 295.
MacBottom HD 21 Meg SCSI . . . . . 749.
MacBottom HD 21 Meg SCSI w/Modem 915.
MacBottom HD 32 Meg SCSI . . . . . $899.
MacBottom HD 32 Meg SCSI w/Modem 1045.
MacBottom HD 45 Meg SCSI . . . . . 1159.
MacBottom HD 45 Meg SCSI w/Modem 1295.
MacBottom IHD-144 Meg *(for Mac II; 1 yr.)* 2195.

Practical Peripherals ... 5 years
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2400 Baud External Modem . . . . . 189.

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Thunderware ... 90 days
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Western Automation
DASCH RAMdisk 2000K . . . . . 399.



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A+ Mouse ADB . . . . . $87.

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Double-sided diskettes.

Sony 3½" DS/DD Disks *(box of 10)* . . . . . 18.



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INFORMATION SERVICES

CompuServe
CompuServe Information Service . . . . . 24.
Grolier's Online Encyclopedia . . . . . 32.

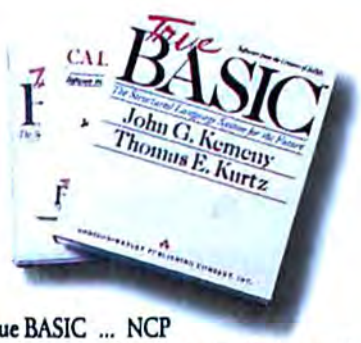
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Clean Image Ribbon Kit . . . . . 12.

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Macinware SE *(Mac SE carry case)* . . . . . 76.

Kalmar Designs
Teakwood Roll-top Case *(holds 45 disks)* . . 14.
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Teakwood Roll-top Case *(holds 135 disks)* 27.

Moustrak
Moustrak Pad *(standard 7" x 9")* . . . . . 8.
Moustrak Pad *(large 9" x 11")* . . . . . 9.

Ribbons
ImageWriter Ribbons . . . . . 4.
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Rainbow Pack *(6 single color ribbons)* . . . . 20.
Multi 4-Color Ribbon *(req. ImageWriter II)* . . . 9.

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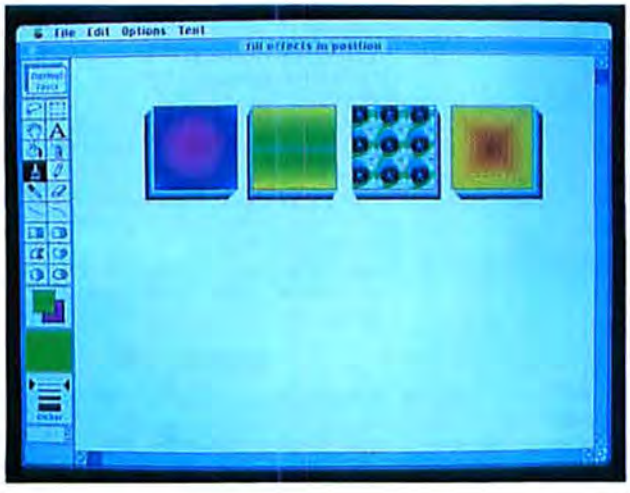
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If PixelPaint provided only normal painting tools and the Color Palette, it would still make a contribution to color software for the Macintosh. But it goes much further.

You can save palettes as separate documents, which *PixelPaint* can in turn open for use in other paintings.

If you choose to REMAP colors when you make a palette change, *PixelPaint* tries to match the old colors in your painting as closely as possible by selecting from among the colors in your modified palette. If you turn REMAP off (the default), new colors replace old ones based on their palette positions, and your painting can easily change its appearance completely. This nomenclature is exactly the opposite of what I would expect because to me the palette positions are much like a map. It's an unfortunate case of creeping computerese. I would have called it "Match Old Colors" instead.

There is an even more serious snafu here, though. The only time you care about remapping is when you work with the palette or when you open a color image created by another application, such as a scanned image. Yet the control for turning remapping on and off is not to be found anywhere near either of these functions; instead, it's hidden away in obscurity in the Preferences dialog, which you access from the Options menu. I still haven't figured out the logic behind that one.





PixelPaint **provides a wide range of Fill Effects as well as a flexible Shadow feature. On the left is a "sunburst" blend, next is a top-to-bottom double-blend, and third from the left is a Tile fill. On the right is a dithered "shapeburst" blend. Notice the different direction of each shadow. Below is the Fill Effects dialog box.**

SPECIAL EFFECTS

If *PixelPaint* provided only normal painting tools and the Color Palette, it would still make a contribution to color software for the Macintosh. But it goes much further. It offers two painting modes: Normal, which works as expected; and Special Effects, which far exceeds expectations.

You enter Special Effects mode by clicking a toggle at the top of the Toolbox. When you select a tool in Special Effects mode, a tool-specific menu appears on the menu bar. Command-clicking from anywhere in your painting lets you access this menu as a pop-up.

The most basic effect is a graduated fill, which *PixelPaint* calls a Fill Effect. Fill Effects are available for filled versions of the rectangle, rounded rectangle, oval, polygon, regular polygon, and freehand tools; for the Paint Bucket; and for the Paint Brush.

The most interesting Fill Effect is Tile. You can select a square portion of whatever is in the Clipboard to act as the tile pattern. You can then use this pattern as you would use any other fill. Four different tile sizes are available: 16, 32, 64, or 128 pixels square.

The other tools have special effects as well. One common to the Line, Arc, Pencil, Paint Brush, and Spray Can is the Cycle Effect. Similar to a Fill Effect, painting with the Cycle Effect produces lines that change hue as you paint, beginning with the foreground color, then repetitively cycling through the palette to the blend color and back again.

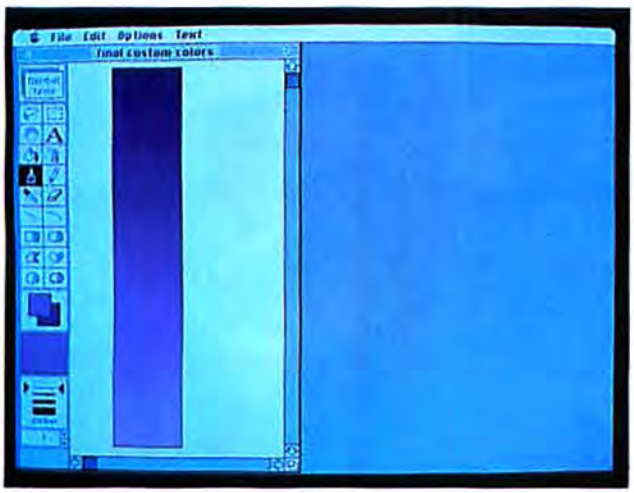
The Paint Brush is the most versatile of the "line-painting" tools, sporting 16 different effects. My favorite is the Clipper, which uses whatever is in the Clipboard as a brush. You can select any portion of your drawing and cut or copy it to the Clipboard, and the Clipper will paint with it. The selection doesn't have to be rectangular; you can use

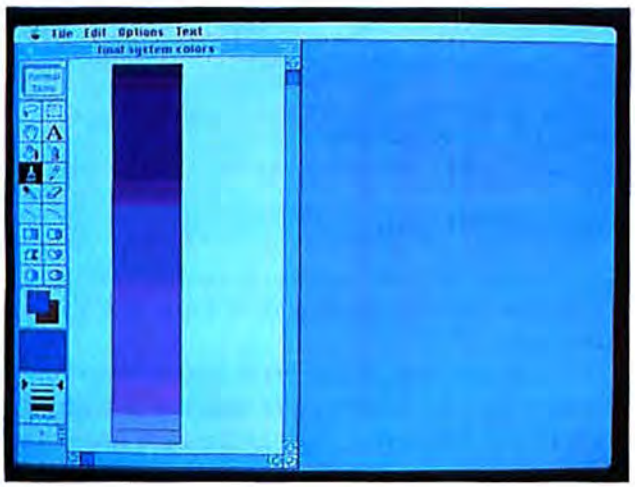
the Lasso tool to copy to the Clipboard if you like. Nor does it have to be contiguous. *PixelPaint* lets you select and copy multiple, disconnected portions of a painting to the Clipboard. You can even use the Clipper with text!

Three other brush effects — Maximum, Minimum and Wash — are useful for colorizing black-and-white images. Maximum puts the foreground color wherever it finds black or a relatively dark color. Minimum puts the foreground color wherever it finds white or a relatively light color. The *PixelPaint* manual includes a tutorial that walks you through the use of these effects to colorize a *MacDraw* image.

Wash is designed for use with gray-scale images from scanners. It maintains the intensity (saturation and brightness) of the image being painted over but changes the hue to that of the foreground color. It can also be used to recolor an image. This effect has tremendous potential, but unfortunately, *PixelPaint* cannot import TIFF (Tagged Information File Format) files. TIFF is the main format used for transporting gray-scale images from one application to another. SuperMac's tech support claimed that Apple's new PICT 2 format could be used for gray-scale images, but as of this writing, no scanner software was shipping that could save a gray-scale image in PICT 2 format.

PixelPaint does, however, support a range of file formats, including *MacPaint*, PICT 2, and EPSF. Exporting *PixelPaint* images in other formats, however, is not without problems. Although *PixelPaint* provides great flexibility in editing the Color Palette, other applications do not yet know how to read these customized palettes — and PICT 2 format doesn't support them.





***PixelPaint*'s palette-editing features are not yet supported by other applications. On the left is a subtle blend created in *PixelPaint*, and below is the same image saved in PICT 2 format and exported to another application. The color distortion that occurs when exporting a *PixelPaint* image depends on the colors it uses.**

DOCUMENTATION AND SUPPORT

On the whole, the *PixelPaint* manual is well done. A solid tutorial section gives you an overview of the product's tools and techniques, and this is followed by a reasonably good reference section. The program also ships with three disks full of sample *PixelPaint* artwork.

But all is not perfect here. My biggest complaint is the manual's lack of any discussion of color-output devices. Nor is there much talk about problems of compatibility with other software.

More immediately obvious is the lack of color in the manual itself. That's right. It's all in black and white. This, to me, is a foolish attempt at thrift. Certainly, if SuperMac didn't want to pay for four-color process on every page, it could at least have printed one or two sections in color. The illustrations lose much of their impact by trying to present color concepts in shades of gray. These black-and-white screen shots, many of which are fuzzy, also do little to promote the SuperMac color monitors on which they were no doubt created.

Although *PixelPaint* is easy to use, you will have questions. SuperMac's telephone support for the program is excellent. I called several times with questions ranging from the ridiculously simple to the ridiculously esoteric. Each time my question was answered courteously and rapidly.

PRODUCTIVITY TOOL OR EXPENSIVE TOY?

If you were one of the first to buy a Mac II and have been champing at the bit for color software to play with, *PixelPaint* will more than meet your needs. It will probably be, for the near future at least, the color paint program of choice for high-end users. The features discussed in this review only scratch the surface of the program's power.

But can you produce anything useful with it? SuperMac is positioning *PixelPaint* as a business product for generating color presentation graph-

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ics. Some problems will make achieving that goal difficult.

PixelPaint is a memory hog. It runs on a 1-megabyte Mac II but just barely. Documents are limited to 512 X 512 pixels. To get maximum-size documents (1024 X 1024 pixels), a full 2 megabytes must be allocated to the program. And to save a full-size PICT 2 file from within *PixelPaint*, the program must be running with 4 megabytes of memory.

A full 8 bits of video RAM are required even to launch the program. This, combined with the memory requirements described earlier and the $495 price tag on the program itself, mean that the cost of the minimum hardware platform for getting any productive work done in *PixelPaint* is well beyond that of the minimum Mac II hardware configuration.

Even if we concede that *PixelPaint* is a professional graphics tool, not intended for the rest of us, there are still problems.

Just as *MacPainters* were frustrated by the lack of object-oriented drawing, which only the release of *MacDraw* relieved, *PixelPainters* will similarly find themselves constrained by the lack of objects. It's more tedious to use painting tools than it is to use drawing tools, and this will limit the number of users who will apply *PixelPaint*'s abilities to produce, for example, color graphs and charts.

The program is not particularly fast. It takes a full 30 seconds to save a 1024 X 1024-pixel image to disk, even if you haven't drawn anything on the screen. Depending on the complexity of your image, it can take even longer to do a full-screen fill. And if you want to avoid disjointed images, you must frequently draw much more slowly than you naturally would.

Screen navigation is also not up to snuff. Scrolling crawls at a snail's pace, and although you can speed it up by holding down the Option key, this does not hold true in Fat Bits mode. The effectiveness of the hand tool is minimized by the lack of a keystroke command for invoking it — you have to select it from the Tool Palette. And there is no auto-scrolling except in Fat Bits.

The program is not particularly fast. If you want to avoid disjointed images, you must frequently draw much more slowly than you naturally would. Screen navigation is also not up to snuff.

Then there's the question of output. It's all well and good to make beautiful pictures on the screen, but then what? For *PixelPaint* to be useful for creating business presentations or as a color proofing device, its images need to be turned into printed output, slides, or transparencies. But all you get with *PixelPaint* is a single page of output from a Tektronix 4693D color printer stuffed into the shrink-wrapped box. No discussion of this crucial subject. Period. Not all users will be able to afford such color-output devices, and their availability from service bureaus is still limited.

The manual is also silent on the possible use of *PixelPaint* images for video presentations, either static or animated. Nor, at press time, is there a way to generate a four-color PostScript separation from *PixelPaint*. Although there is some doubt that the halftoning machinery in current implementations of PostScript is capable of producing high-quality, high-resolution separations, the lack of this feature means that *PixelPaint* cannot be used easily to generate images for reproduction on a printing press.

THE VERDICT

PixelPaint does a masterful job of bringing the power of color to the Mac II screen. SuperMac was wise to market the product. It will undoubtedly be in the electronic toolbox of nearly every Macintosh artist in the high-end graphics market at which it is targeted.

SuperMac has, however, done a less than brilliant job of educating *PixelPaint* users about the practical considerations involved in actually using the product. I refer here primarily to the lack of technical discussions of color compatibility with other applications and color-output devices.

And then there is the price. I mean the real price — 2 to 4 megabytes of RAM and an 8-bit video board — not just the $495 sticker on the program itself.

I suspect that two groups of users will find that they simply can't do without *PixelPaint:* graphic artists, who as always will find a way to iron out the difficulties of using new tools for productive work; and Macintosh enthusiasts who simply want color on the screen and don't care if they ever output an image.

PixelPaint is, by SuperMac's own admission, partly intended to showcase — and sell — the company's hardware products: Spectrum video cards, color monitors, and memory upgrades. In this, it will probably be successful. I can't help wishing, though, that SuperMac had given us something perhaps less powerful that required a less expensive hardware platform.

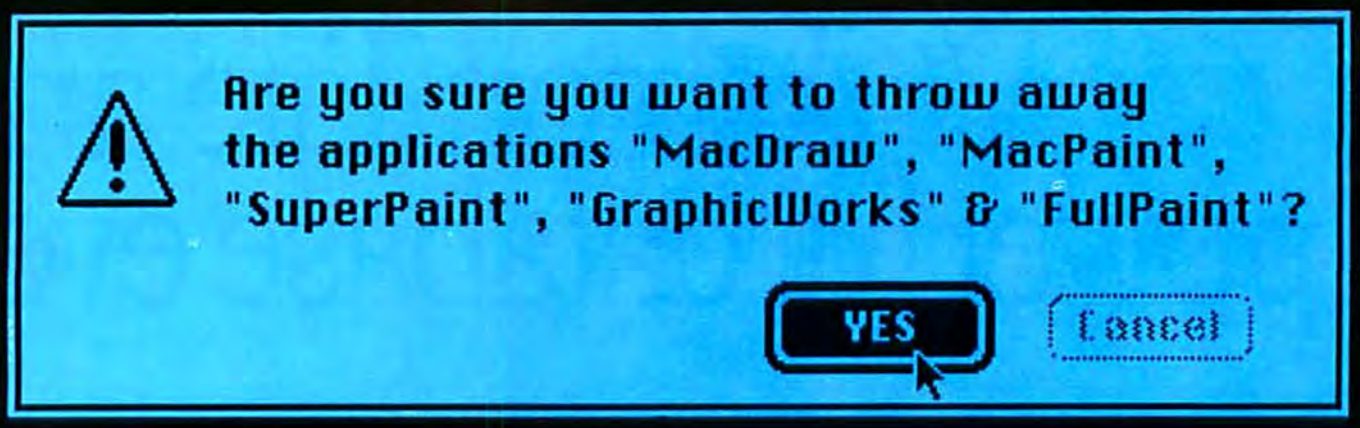
HENRY BORTMAN IS A SAN FRANCISCO-BASED FREELANCE WRITER. HE IS A FREQUENT CONTRIBUTOR TO MACUSER. HENRY IS ALSO A SYSTEMS ANALYST FOR US SPRINT AND PLAYS BLUES HARMONICA IN THE BAND RED BLUES.

MACUSER RATING

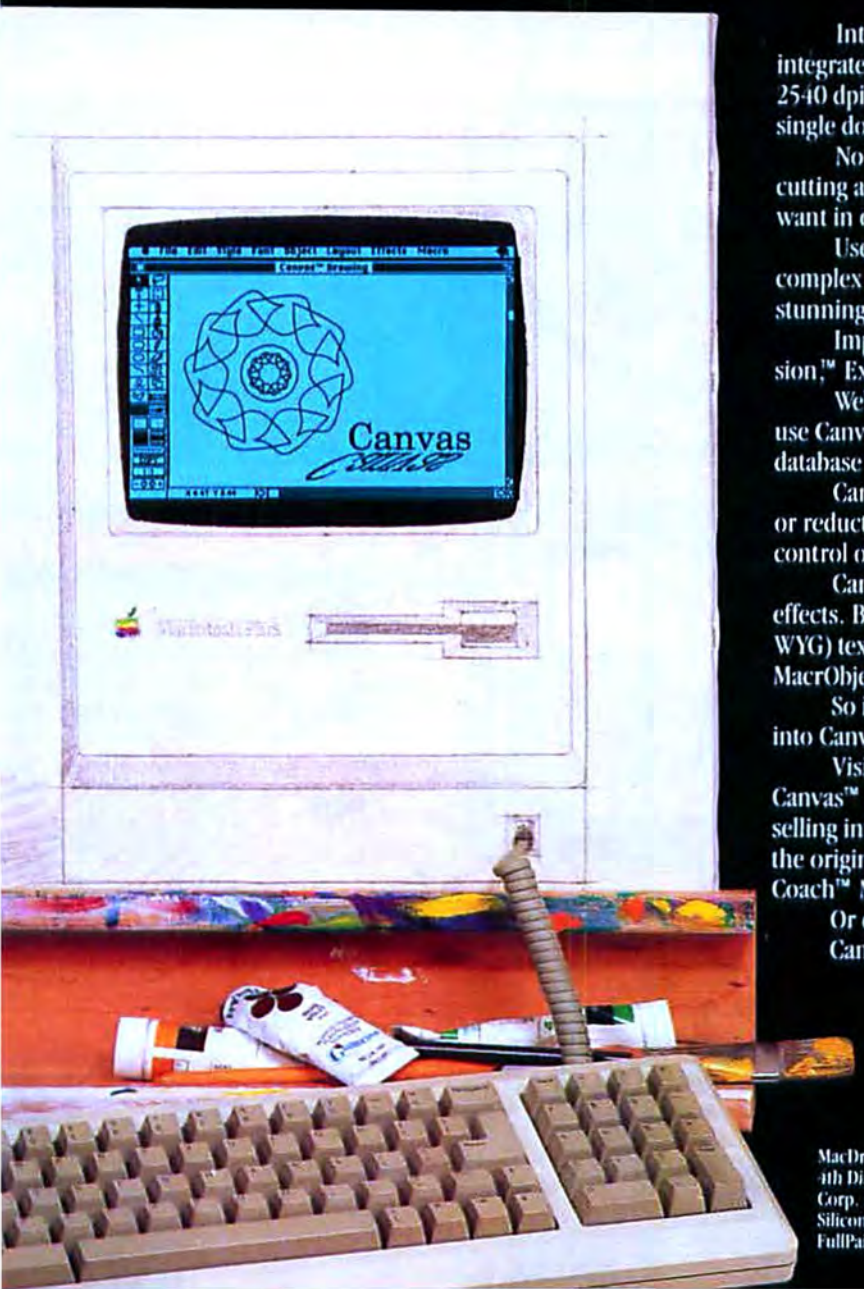
PixelPaint ★★★★½

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ □ □
On-Screen Help	None
Performance	■ ■ ■ ■ □
Support	■ ■ ■ ■ ■
Consumer Value	■ ■ ■ ■ □

Comments: The Cadillac in color paint programs on the Mac II. **Best Features:** Stunning color special effects and customizable color palettes. **Worst Features:** Slow OPEN and SAVE and no documentation on color-output devices. **List Price:** $495. Published by SuperMac Software, 295 North Bernardo Ave., Mountain View, CA 94043. (415) 964-1122. Requires Mac II and 8-bit video card. Not copy-protected.



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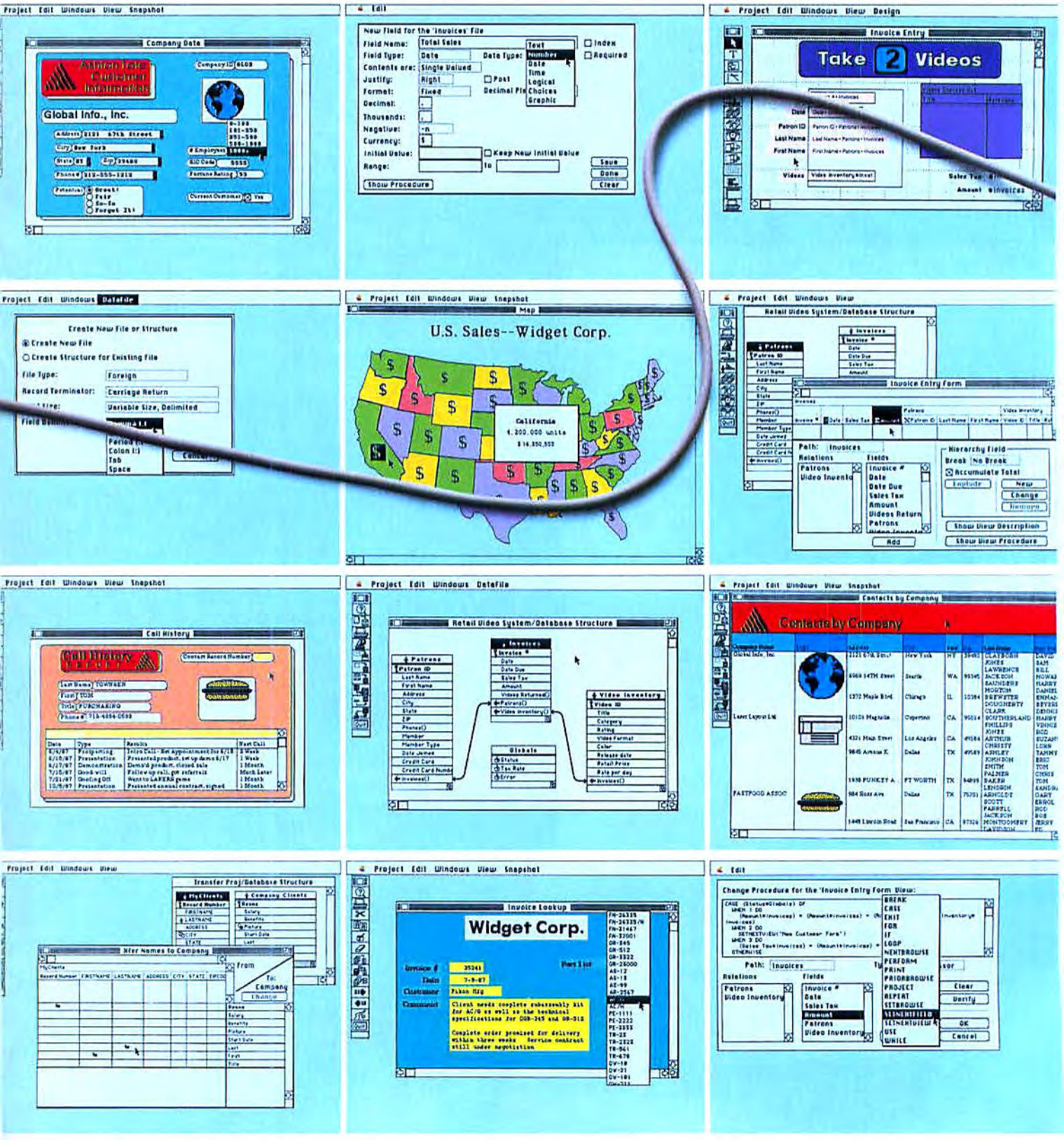
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Double Helix Takes Form

Icons and an intuitive graphics interface help dress your database for success.

WHOEVER SAID "LOOKS ARE EVERYthing" presaged what has made the Macintosh a success. The saying goes double for the latest incarnation of *Helix*. The power users' database is as flexible in its screen and printed output as it is in its development language.

This article, the second in a two-part series on *Double Helix II*, looks at how the program handles forms. Output is critical when it comes to database design. No matter how powerful its relational searches are, if a database can't be customized for both data entry and output, then its users will be limited to those few who actually created it. In this combined tutorial/review, you'll see how *Helix* takes its object-oriented approach to database management and applies it to form design.

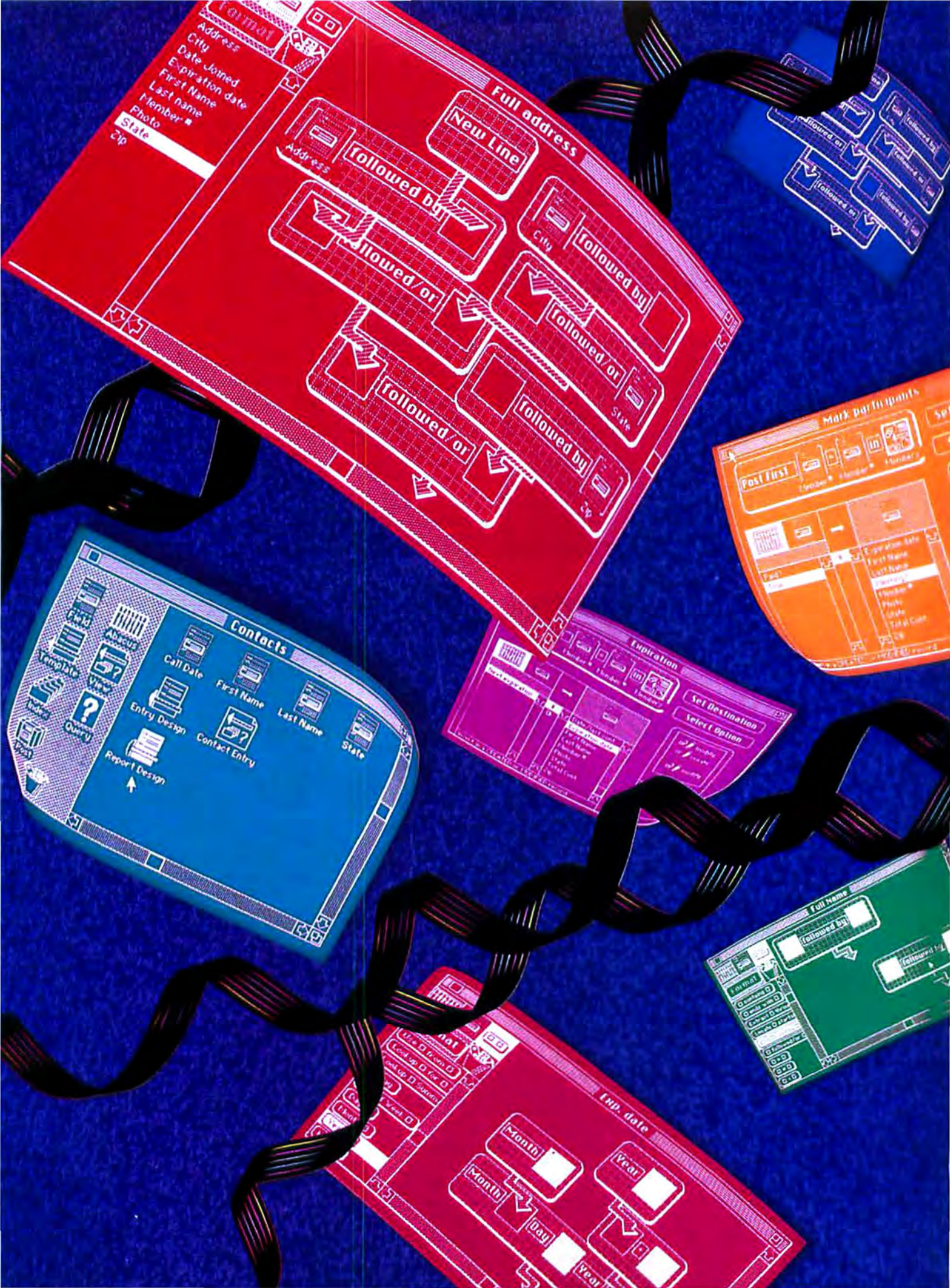
FORM DESIGN

To begin designing a form, drag the Template icon from the icon palette in a relation to the work area and double-click on it.

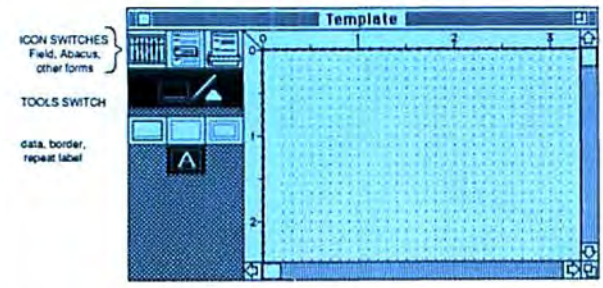
The icon switches at the top of the palette display the names of previously created icons that you can use in the construction of the form. The Abacus switch lists the name of calculations that have been built in the relation; the Field switch lists the name of data-field icons created in the relation; and the Template

BY GARY HIRSCHBERG

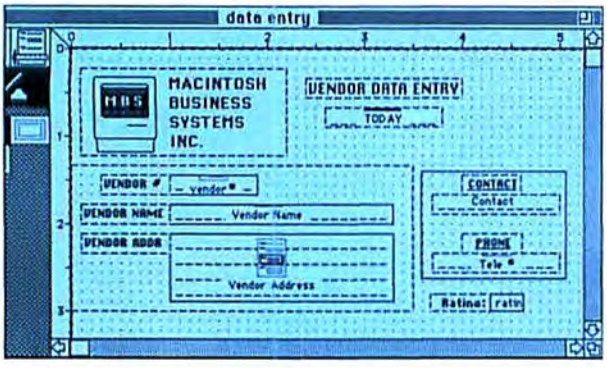
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Year
Day

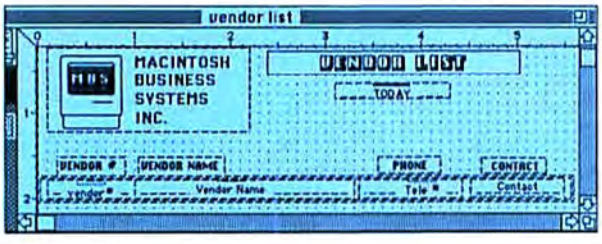
Double Helix Takes Form



Opening the Template icon is the first step in designing a form.



This Layout template contains (clockwise from upper left): a Picture field for the company logo, a field for form's title, an Abacus field for the current date, a Border rectangle drawn around the Contact/Phone and Rating fields for design purposes, and an invisible border around the vendor information. Because the invisible border begins above the Contact/Phone fields, the vendor information will be filled in first.



The Repeat rectangle, shown at the bottom of the template, is used to create listing forms, which are for display and report purposes only. They can't be used for data entry.

switch lists previously created templates that can be used as subforms or lists within the main form.

The four rectangles listed under the Tool switch are the *Helix* visual-design tools. You select the appropriate rectangle and draw it into position on the form in the same way as you draw a rectangle in *MacPaint* or *MacDraw*. You can move or resize rectangles at any time, using the grow box.

If you want to have fixed information on the form, use the Label rectangle and type into it whatever you want. You can also paste pictures into a Label rectangle.

You use the Data rectangle for displaying information stored in the database. After you have drawn the Data rectangle, you can select either the Field Icon or Abacus Icon switch, and after locating the name of the field you want to display from the list presented, you select and drag it into the Data rectangle. The size of the rectangle affects only the length of the data displayed — it has no effect on the data itself or on the database structure. In fact, if you are entering data and continue typing past the end of the Field rectangle, *Helix* will store all the entered characters, even those not visible.

In fact, if you are entering data and continue typing past the end of the Field rectangle, Helix will store all the entered characters, even those not visible.

You set field default values by creating the value with an Abacus icon and then placing the Abacus icon in the same Data rectangle as the Field icon that will permanently hold the data. The full power of *Helix* calculations is thus available for default values. During data entry, the default value will automatically appear in the Data rectangle, but you can override this value by typing over it. If you do this and realize that you've made a mistake, a backward drag, followed by a delete and tab, will reinsert the default value. *Helix* also provides a "keep value" function whereby the default value is the one entered during a previous data-entry session. You have the option of having all default fields on a particular template shaded if you wish.

When you use a Data rectangle with a Picture field, you can have the picture either clipped to fit the size of the Data rectangle or scaled to fit.

You can also define Data rectangles as "nonselectable," meaning they are for display purposes only; you cannot alter their values. This approach makes it easy to have different screens for different levels of personnel (access to the screens being controlled through custom menus) that effectively control read-only and read/write capability on a field-by-field basis.

You have the option to outline both Data and Label rectangles with a solid border — a single line of fixed width that is not changeable in style. This ability is useful not only for design purposes but also to establish a standard format differential for input and displayed fields.

Border rectangles serve three purposes. You can specify them as either solid or invisible, and you can have rectangles with multiple borders, but they cannot overlap. The first use of a Border rectangle is merely visual and lets you draw a rectangle around any area in the template layout (make sure you specify it as solid in this case). The second use is to group several fields, or an area of the layout, so that you can reposition them on

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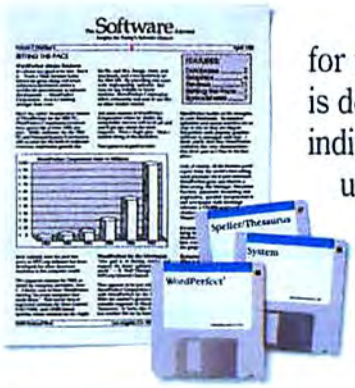


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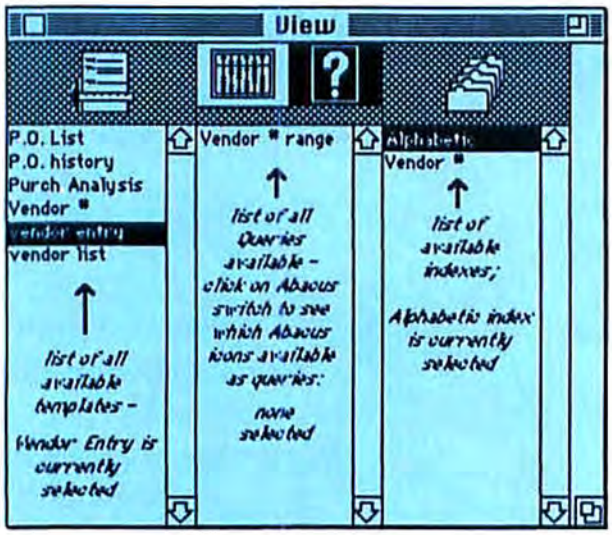


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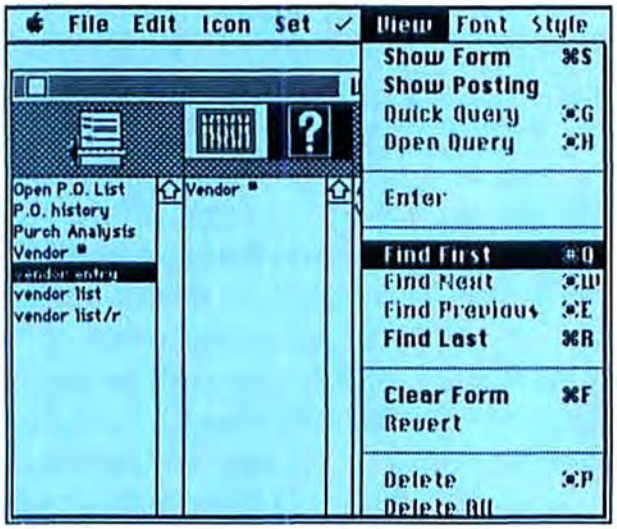
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Double Helix Takes Form



The View window lists all available templates in alphabetical order in the column on the left; indexes appear on the right. The middle column lets you specify selection criteria that will restrict the records displayed in the view.



Once the view has been defined, you use the View menu to choose what will be displayed. For a listing template, the only option is Show Form, which shows the entire list.

the layout en masse as opposed to field by field.

The third and most interesting use is to control the sequence of data entry into fields. On a screen display used for data entry, *Helix* moves from left to right and from top to bottom as you tab from field to field. If you had your fields arranged into two columns for a presentation sequence, but you wanted to enter the data in the left column first because it was operationally more sensible, you could draw a Border rectangle around all the fields in the left column. *Helix* would then process these as a group first before proceeding "across" to the right column and then down the page. Because you can have multiple Border rectangles in a layout, you can get quite sophisticated in sequencing data fields into entry groups.

LAYOUTS

If you want to create a Layout template quickly, *Helix* provides you with the ability to do so. After opening a blank Template icon, you select QUICK ENTRY from the Edit menu, and *Helix* will create a template for you, using the names of the field icons as labels. You can control the sequence of the fields by selecting the field icons in the order you desire prior to choosing QUICK ENTRY. You cannot, however, restrict the layout to certain fields; all fields are automatically inserted into the layout. In addition, Abacus icons are not considered and must be inserted manually.

Helix makes no distinction between input and output layouts, as *4th Dimension* does. To print a record, you select the desired template and choose PRINT from the File menu, even if you're using the template for data entry. FIND AND PRINT ALL prints the entire file or those records selected by a query, about which I'll say more later.

LISTING FORMS

The final rectangle on the palette is called a Repeat rectangle, and you use it to create listing forms. Listing forms are for display and report purposes only; you cannot use them for data entry.

Note the double-bordered rectangle that surrounds the data fields. It is the repeat rectangle that was drawn around the fields to be included in the list. A template can contain only one Repeat rectangle. You can, however, create sublists by using subforms. An example would be to list all the details of all open purchase orders under each vendor.

SELECTING A VIEW

So far I've discussed how you define fields, calculations, index files, and Layout templates. The View icon ties them all together and presents a particular view of the data in a particular sequence. It allows you to place constraints or selection criteria on the view and to enter or display data. To create a view, you drag the View icon from the palette in the main window to the main work area and open it to specify what it is you want the view to represent.

In the example shown, the template Vendor Entry has been selected along with the index called Alphabetic. This section results in a view of the records in the Vendor relation, in accordance with the template previously illustrated, displayed in alphabetic sequence. If you wanted the display in vendor # sequence, you would select Vendor # in the index column. Clicking anywhere below the list of indexes would deselect all of them, and the data would be displayed in the order entered.

QUERIES, ANYONE?

The Query column has two switches at the top that let you view

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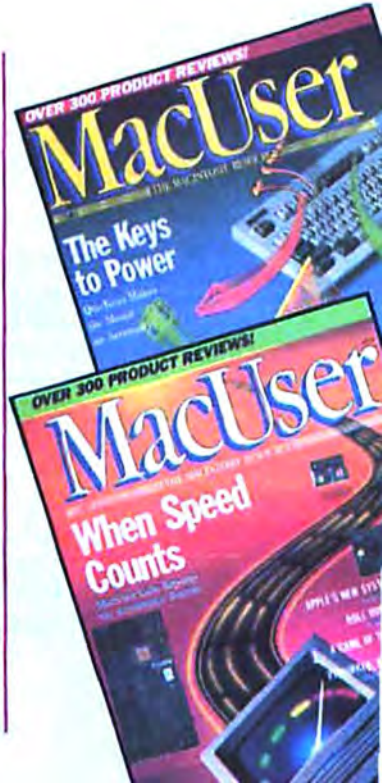
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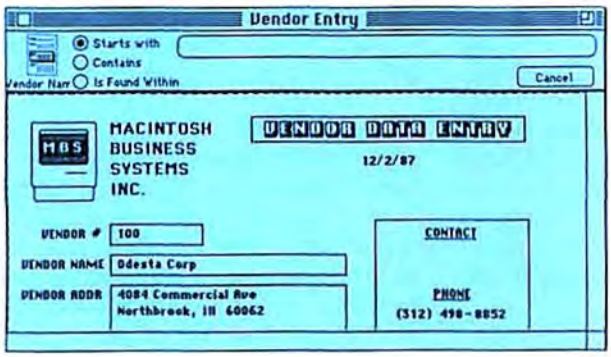
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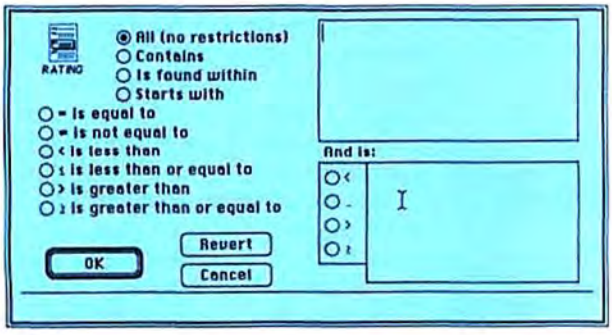
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The Quick Query window is available only on nonlisting forms and lets you make a selection based on the value in a single field.



For more complex searches, you can design a template in the regular Query window. The resulting Query template doesn't have to be the same as that used in the view and can even refer to fields that weren't specified in the view.



In constructing a Query template, you can also define very specific criteria for each field.

lists of the two available types of queries: Regular queries, which will be discussed later, and Abacus queries. You select the type of query by selecting the appropriate switching icon.

The Abacus query list would contain any Abacus icons that resulted in a true or false (yes or no) value; selection of an Abacus query displays only those records for which the result of the calculation in the Abacus is true. You could, for example, have an Abacus that returned *true* if there was no data in the Date Received field of the Purchase Order record (and *false* if there was). If you selected this Abacus query along with the P.O. List template, only "open" purchase orders — that is, those not received — would be displayed; if you didn't select a query, all purchase orders would appear on the list.

Once you have defined the view by choosing the template, query (optional), and index (sequence)—(optional), you go up to the View menu and choose one of the selectable items. If the template is not a listing template, FIND FIRST will display the first record in the sequence you select. CLEAR FORM will present a blank template ready for entering a new record. Once you have a record, FIND NEXT and FIND PREVIOUS will display the next and previous records, respectively. The only option with a listing template is SHOW FORM, which displays the entire list (subject to query considerations).

When you close the view with the close box, *Helix* remembers the settings, and the next time you open it, these choices will still be in effect. If you want to look at information regularly, using a particular template in two different sequences, you can create two different View icons, selecting the same template but using different indexes, and give the Views different names. They would both then be readily available without making you go back to the selection window to change the specifications — for example, the Vendor List template in both alphabetical and vendor # sequences. You would have to use this approach in the Custom menu environment, as you cannot alter the specifications of a view when operating in Custom mode.

Several View windows can be open at the same time, each displaying different lists or records from the same or different relations. If a record is changed in one window and a record containing dependent data exists in another window, this change will be reflected in the second window. In a multiuser environment, this integrated referentiality also exists across the system: A change made in a window in one system will be automatically reflected in any open windows in any other system nodes that are affected. (The multiuser system protects against more than one user's attempting to modify the same record at the same time.)

Consistent with the *Helix* environment, you can find a record you want to change without stepping through all of them one by one or writing a single procedural statement. Two options are available: Quick Query and Query templates.

QUICK QUERY

The Quick Query feature is applicable only to nonlisting forms and permits you to do a simple selection on the value in a single field. The field must be a data field; it cannot be a derived field — that is, a calculation result.

To activate Quick Query, click the mouse, with the cursor anywhere in the field you want to query, and then select QUICK QUERY from the View menu. The name of the selected field then appears at the top of the window along with the available selection options. You choose the selection criteria, enter the value in the long box at the top of the query window, and press the Enter key. *Helix* then searches the file and presents you with the first record it finds that

meets the selection criteria. It searches the file in the sequence of the index associated with the particular view. Pressing the Enter key again initiates a search for the next record satisfying the specified criteria.

When you find the record you want, you can place the cursor in any field or fields you want to change, make your changes, and press Enter when you have finished. The record will then be updated. If you click on the Cancel button in the Query window prior to pressing Enter, *Helix* will make the update and discontinue the search. Leaving the Query window open will result in the record's being updated (if changes were made), and then the search will continue for the next record. If you close the view with the Quick Query window open, it will appear the next time you open the view.



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REGULAR QUERY

You use the Query icon to define a more complicated search, ranging from a one-field search to a combination of fields, each with its own criteria. The Query icon is the rectangle with the ? on the relation's Tool palette. When you drag a Query icon into the work area and open it, you are presented with a list of all nonlisting templates constructed in the relation.

When you select one of the templates, it is displayed in the Query window and becomes the basic form through which you can define the selection criteria on any of the fields in the template. When you are looking at a specific view that has a query associated with it, the option OPEN QUERY is available in the View menu. Selecting it will present the form for you to work with. If you want to specify a restriction, you click on the desired field and are presented with your options.

You can restrict as many of the fields on the form as you like. If you were looking at a nonlisting form and selected FIND FIRST in the View menu, *Helix* would find the first record that met the defined combined query; a listing form would list only those records meeting the criteria.

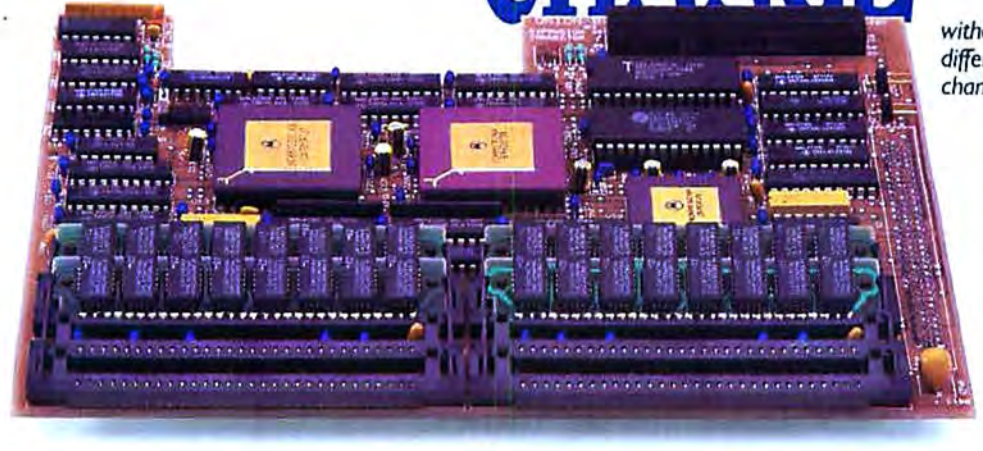
You can design specific templates for queries; the Query template does not have to be the same as that used for the view and it can refer to fields not specified in the view. The template can also contain Abacus or Calculation fields, contrary to a Quick Query. You can thus do selections based on all manner of complex selection criteria, including totals obtained from summing records in another data relation.

The relationship between the various fields in a Query template is an AND-type relation. That is, if you restrict the Rating to equal A+ and the Address to Contains N.Y., you would get Vendors in New York with an A+ rating, not Vendors in N.Y. OR with an A+ rating. If you wish to create an OR relation, or an AND/OR, you can construct an

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Double Helix Takes Form

Abacus that returns a true/false value, place it on the Query template, and define the appropriate selection criteria (true or false).

A query can be associated with more than one view. If, for example, you want to have several different formatted lists, all restricted by the same selection criteria, you can tie them to the same query. If more than one listing view referring to the same query is open at the same time and you change the query values, all lists will automatically be affected.

Helix remembers the last setting of a particular query, and it stays that way until it is changed, even if the system is closed and reopened. This memory is advantageous in designing a custom system, as you can preset query values for commonly used reports. If you use the query structure and continually change the values, however, you can unintentionally get a restricted list if you forget that you have previously set values — especially pertinent if more than one view refers to the same query.

There are two general approaches to constucting a query system. The first is to contruct a general Query template that contains all the data fields or calculations on which you want to restrict a list or access a record and have this single Query template referred to by multiple views. You can then merely open the query and define your criteria.

You could also have multiple views defined, using the same View template but referencing specific — that is, more restricted — queries, perhaps even with preset values. These views would have names or labels that described their specific purposes — for example, Western Territory Customer List — which could then be placed in a Custom menu.

The latter technique is more appropriate to a customized system wherein you want to make things as simple as possible for users. A mix of these two techniques is most likely: the latter approach for commonly used lists and record-access criteria and the former when the predefined ones don't apply.

Effective form design is one of the first — and most important — steps in using a database. *Double Helix II*'s graphic approach to the problem makes the process simple without sacrificing power. By letting users focus on ends rather than means — that is, what you want your database to do rather than how it does it — *Helix*'s icon-driven environment makes it possible for even the most paranoid scriptphobe to customize and use a highly advanced database.

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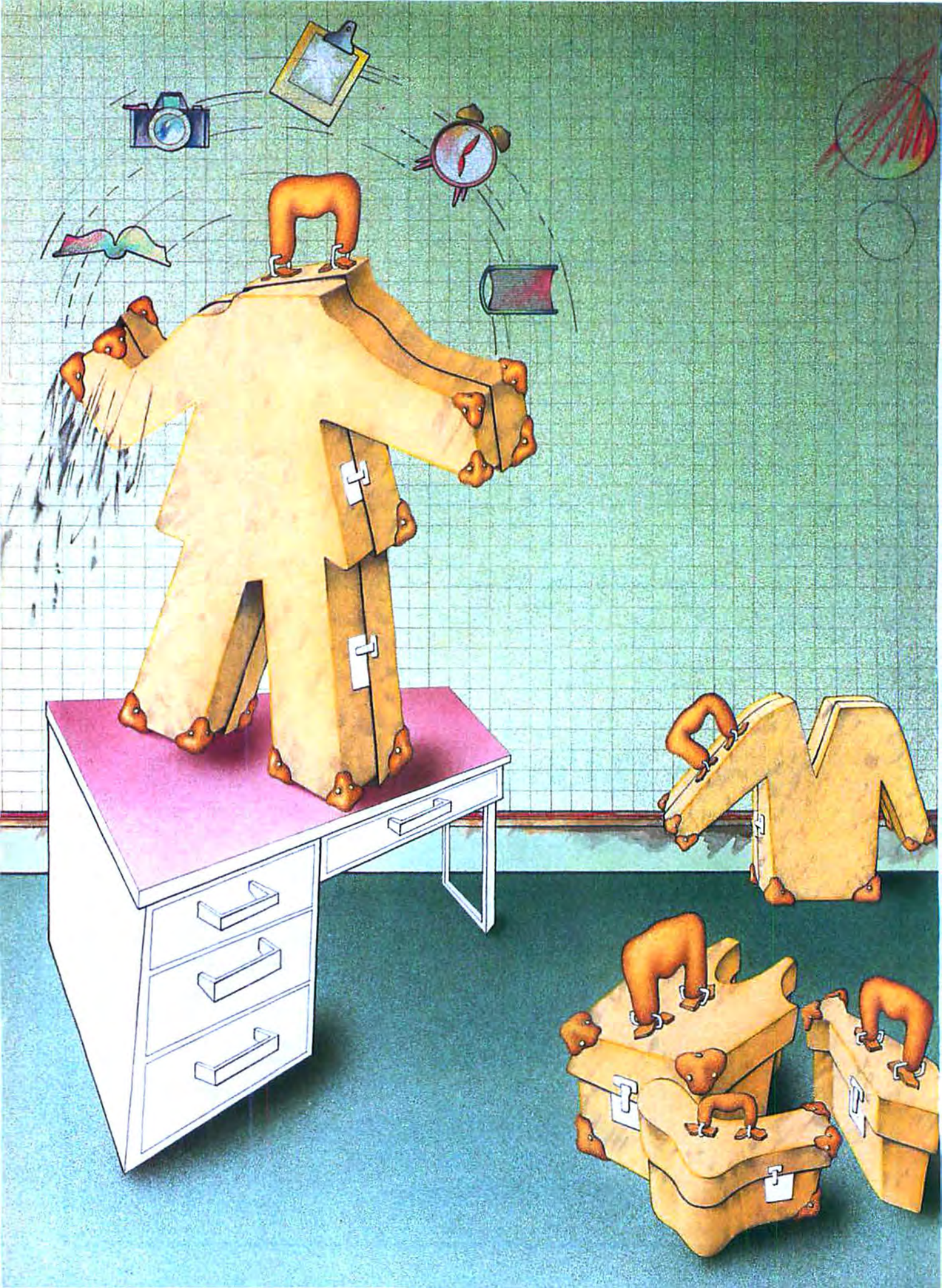
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DAs of Our Lives

FONT/DA Juggler and Suitcase go one on one. You pick the winner.

BY SHARON ZARDETTO AKER

HANDLING A LARGE NUMBER OF DESK accessories and fonts was never a problem in the early days. You ran out of disk space or memory long before you ran out of room in a menu. Then came hard disks and megaRAMs, and a *System* update that included scrolling menus. That basically solved the font problem, but there was still a *System* limitation of 15 "slots" in the Apple menu for accessories.

Gone are the days when I could impress onlookers with an Apple menu that stretched beyond all reasonable limits. By using a specially edited *Font/DA Mover,* I had 21 desk accessories (yes, I really used all of them) to go along with my 30 fonts (no, I didn't use them all, but I liked to keep them around just in case). Now, anybody can access almost any number of fonts and accessories by using special utilities such as *Suitcase* from Software Supply, *Font/DA Juggler Plus* from Alsoft, or *Font/DA Switcher* from Olduvai.

Font/DA Switcher was not available in time for review, so I took a close look at the first two. Both do essentially the same thing, each in its own way; there's no clear winner in the head-to-head comparison. Personal preference is the deciding factor in this case.

ABOUT FONTS AND DAs

Both font/DA handlers take the same approach from a programming point of view. Fonts and desk accessories are a special type of entity called resources. A resource (things such as icons and pictures are resources, too) is available to the Macintosh — and therefore to you — whenever it's in an open file. The *System* is always open, so fonts and DAs stored in the *System* are always available. The current application is an open file, too — hence the old trick of installing a DA or font into an application.

Suitcase and *Font/DA Juggler Plus* keep other files open: files that contain fonts or accessories or both. Because the files are open, their resources are available.

INSTALLATION

First, a word about software versions. The *Suitcase* release I'm using is 1.2.1. It's an update to the version released at the San Francisco Macworld show in January, made available within weeks of the show to fix a few minor bugs. *Font/DA Juggler Plus* 1.0 (henceforth to be referred to as *Juggler)* is the update to *Font/DA Juggler II.*

Installation of the utilities couldn't be easier: Drag the icon into your *System* folder and restart the computer. *Juggler* and *Suitcase* are both INITs, files that are automatically installed or run at start-up. In both cases, you can disable the start-up installation by holding down the Shift key when you start the Mac.

Deinstalling either utility isn't difficult, but neither is it intuitive. You can't just drag the icon to the trash; because it's "in use," it can't be

KEVIN O'SHEA

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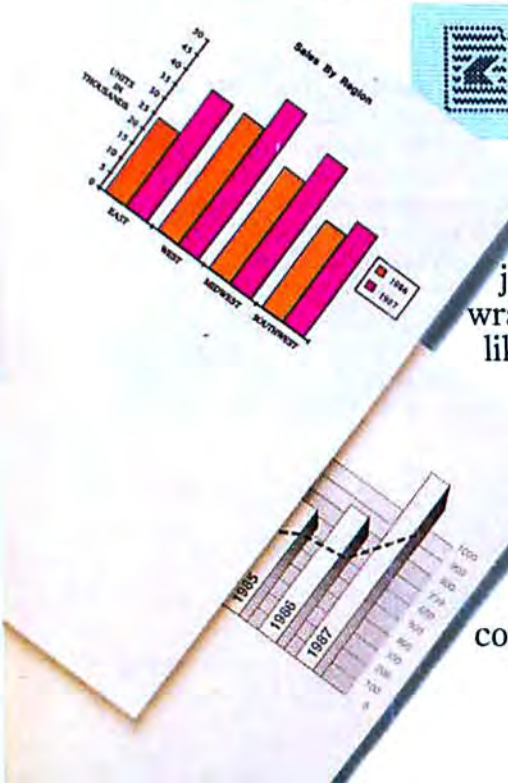
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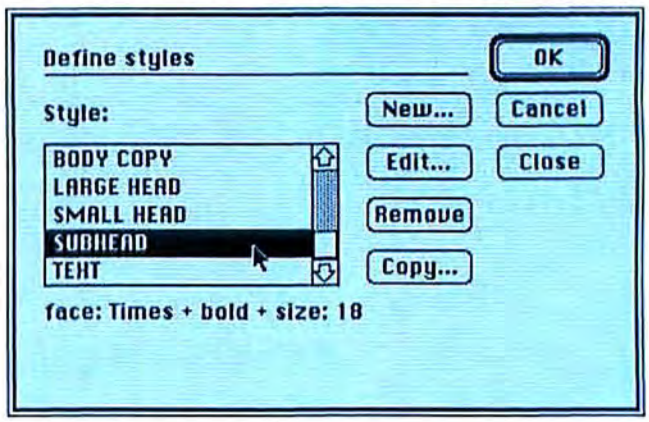
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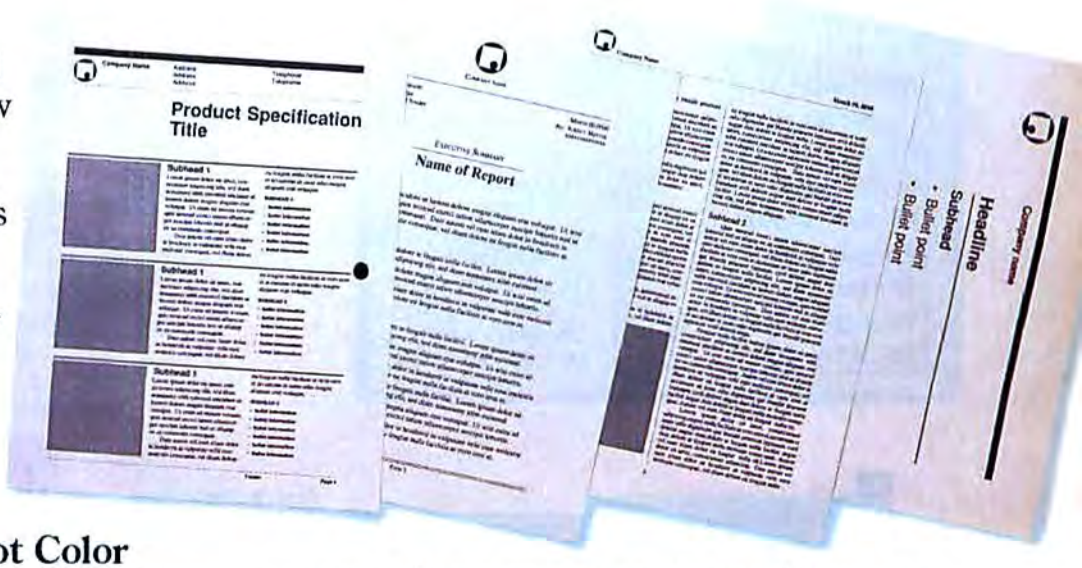


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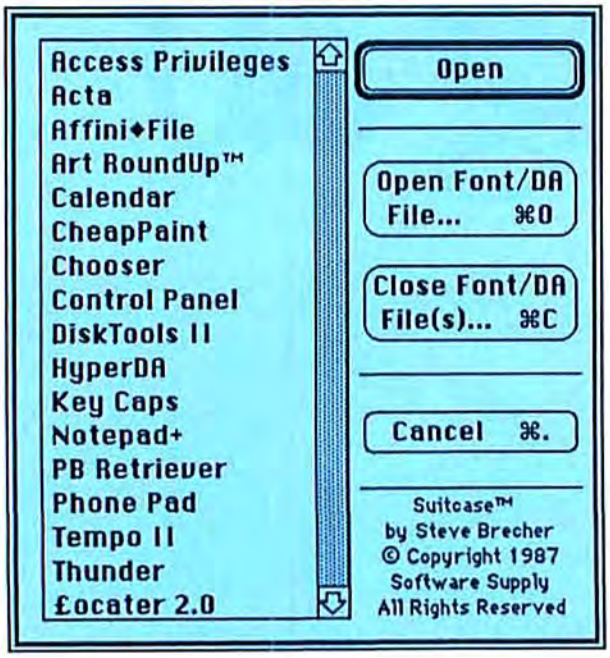
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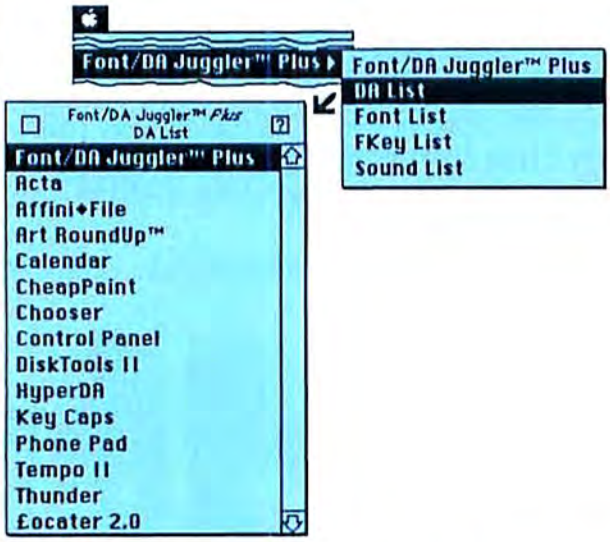
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Suitcase's single dialog lets you open and close files as well as select and open desk accessories.



Font/DA Juggler Plus' hierarchical menu lets you get at its main dialog or any of its resource lists.

thrown away. You have to drag the icon out of the *System* folder and restart the Mac again. Then you can trash it.

USING DAs

When you're using *Suitcase,* it appears as the first item on the Apple menu, immediately beneath the About selection for whatever program you're running. It has its own keyboard equivalent (Command-K), which is ignored if the same combination is in one of the application's menus.

When you select *Suitcase,* a dialog opens displaying all the currently available accessories: those installed in the system and those in any file you've already opened with *Suitcase.* The dialog lets you open and close files that store desk accessories (and fonts, but I'll get to that later); it also lets you open any of the DAs in the list.

Juggler takes a different approach but has the same result. *Juggler*'s menu item also appears at the top of the Apple menu. It takes advantage of hierarchical menu structure and offers four choices in the submenu: Font/DA Juggler Plus, DA List, Font List, FKey List, and Sound List. By selecting the first item, you can get at *Juggler*'s main dialog, where you can open and close DA files (and other things, but I'm talking DAs right now). Selecting DA List from the secondary menu opens a separate dialog that lists — you guessed it — the available accessories. You can select and open any DA in the list.

INSTANT ACCESS AND FINE POINTS

Once you satisfy your craving for infinite DA access, other issues come under consideration: specifically, how many can you get at, how easy is it to get at them, and can you do everything through the keyboard if you want to? (The usual power-user concerns.)

Both *Suitcase* and *Juggler* measure up admirably. Each lets you open up to 12 files at a time; the files can be chock full of accessories, fonts, or both. You can run into a few problems with resource names and numbers, as described later, but basically you can get at as many as you want.

How easily can you get at them? On a beginner's level, both *Suitcase* and *Juggler* require a few levels of selection and reaching for the mouse, but both also provide keyboard-only options.

You can select *Suitcase* by its keyboard equivalent. Then you can choose a desk accessory in the alphabetical list simply by typing its name, or only as many letters as you need to differentiate it from the others. You can even scroll through the list by keyboard commands if you want to just read through it without selecting anything. A press of the Return key opens the accessory.

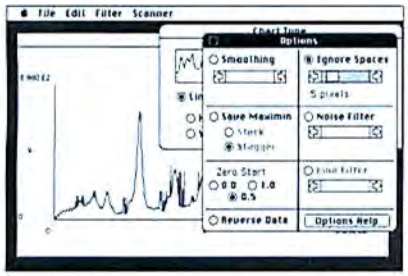
Juggler, too, has keyboard-only control. You can bypass its hierarchical menu structure by assigning hot keys to each of the subordinate menu choices, so you can pull out the DA list without reaching for the mouse. Once the list is up, you can manipulate it from the keyboard, selecting and opening the desk accessory of your choice. Unlike *Suitcase,* which forces you to use *ResEdit* to change its Command-key equivalent, *Juggler* provides an Options dialog, which among other things allows you to set the hot keys you want to

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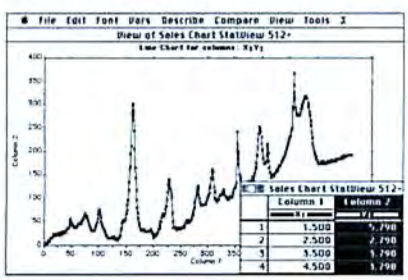
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An assortment of powerful interpolation and smoothing options, data filters, distribution options, image tilt corrections, and screen-based visual data editing offer impressive flexibility.

Data Scan requires a Macintosh with a minimum 512K of memory.

Data Scan supports MacPaint, Thunderscan, Uncompressed FOTO, Data Copy, Dest, LoDown, Hewlett-Packard, and MacScan files.



Save the Data Scan text file and open it in a word processor, spreadsheet, or statistical analysis package. Here the extracted data is plotted by StatView 512+.



Welcome to the World of the Digital Terrorist

Every living adult is more than familiar with the planet-wide horror of terrorism. The hijacking of airplanes and ships, the random killing of innocent men, women and children, and the taking of hostages throughout the world has become a malignant growth on the body of civilizations everywhere.

Suddenly, we have a new kind of terrorism that is potentially as devastating and ubiquitous. It is the computer "virus" program, an unwelcome, hostile and poisonous takeover of the computer operating system. Unlike a natural virus, this one is a deliberate implant, a product ranging from the plaything of the immature child to the outpouring of the deranged psychopath.

The January 31,1988 edition of the *New York Times* provided a chilling, proliferating view of this disease. A sampling from this cafeteria of horror had us taste "infections" of U.S. college campus computers; an attempt to leave a "code bomb" which would have destroyed all files at the Hebrew University in Israel; and a rumored effort to interdict the IRS computers in Philadelphia.

Still, it all seemed just a little remote; it was happening to the other guy. On February 16, 1988, it became real to you and me. *Mac Week* and *Info World* both reported that a virus had been found in a HyperCard stack on CompuServe's MAUG forum. Incredibly, many industry members pooh-poohed this invasion as an innocuous "friendly" message. Do not be fooled. This is plain and simple terrorism.

Like his Uzi wielding brother, this terrorist's colossal ego manifested twisted pride in identifying his accomplishment, and, later, in his trumpeting of a truly asinine justification: "It didn't even cross our minds to do something harmful to the Macintosh!" It appears he doesn't have a mind to cross.

When we are willing to let such invasions of privacy go overlooked, unpunished, and are willing to wait to see if the end justifies the means by individual cases, we are saying that we are willing to negotiate with terrorists—a policy proven time and again to be woefully unsuccessful. We need to treat all cases of this disease with a lethal dose of every legal medicine at our disposal, or we are likely to soon have an epidemic on our hands.

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DAs of Our Lives

use to issue the commands listed in the submenu.

You're probably going to put the desk accessories that you use most often right in your *System*. If you have a group of accessories of secondary importance, you'll probably put them together in a file. Perhaps you have accessories that you use only occasionally; they may be scattered through several smaller files.

But if you're a real power user, you don't want to open a file of desk accessories every time you want to get something in that primary non-*System* group, even if it's only a few extra keystrokes once at the beginning of each computing session. You want the ones you use the most to be automatically installed in the Apple menu every time the Mac is started. Both *Juggler* and *Suitcase* do automatic installation, although in different ways.

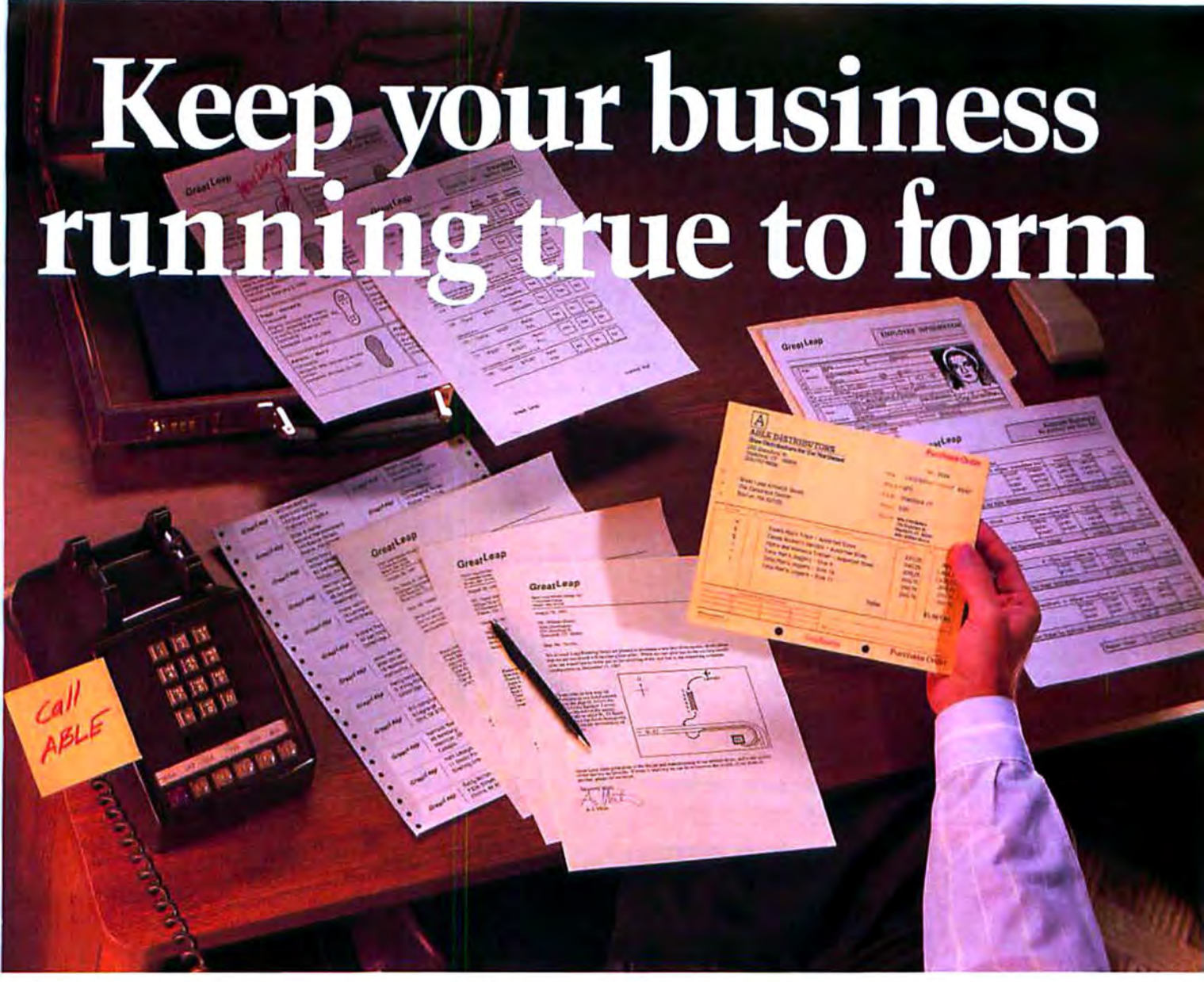
When you shut down your system, *Juggler* remembers which files you had open and automatically opens them again the next time. This works as long as the accessory files are where they were the last time they were opened; if you did any desktop reorganization or renaming, you'll have to reopen the file.

Suitcase takes an entirely different approach. Any font/DA file in the *System* folder whose name is Fonts, DAs, or Fonts/DAs is automatically opened on start-up. In addition, if you have a folder with any of those names in the *System* folder, all the font/DA files in that folder are automatically opened.

There's another fine point that might not have occurred to you, but it did to the designer of *Suitcase:* When you're in *MultiFinder,* the names of opened applications are in the Apple menu, at the bottom, after the accessory list. If you use the menu to switch from one application to another, it's tedious to scroll through 30 desk accessories to get to the listed applications.

With *Suitcase,* holding the Option key limits the menu list to *Suitcase* itself and then the list of applications. *Juggler,* following suit, uses the Shift key to constrain the menu to only *Juggler*'s secondary menu choices and the application list. It's a

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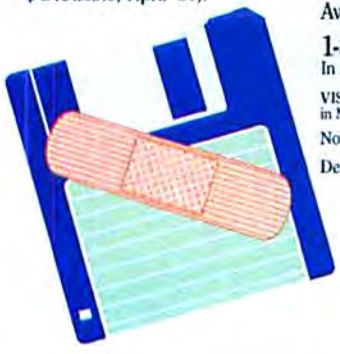
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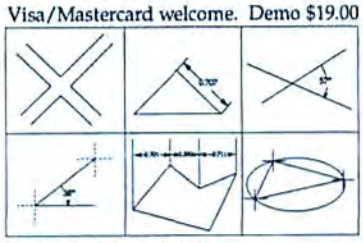


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DAs of Our Lives

nice and much-appreciated touch in both programs.

USING FONTS

Getting at extra fonts with either utility is simple: Open the file that contains the font, and next time you open an application, the fonts will be in the Font menu. The "automatic installation" on start-up works for fonts in the same way as it does for desk accessories.

There's a minor problem with fonts that occurs no matter which utility you're using. An application builds its Font menu from available resources when the application is first launched. So, if you use *Suitcase* or *Juggler* to open font files after an application is open, you won't see the new fonts listed. Conversely, if you close a font file, fonts won't be removed from the application's menu; selecting a "missing" font puts another font on the screen. Both programs display a brief confirmation dialog whenever you close a file to remind you about the font situation.

IDENTITY CRISES

Resources on the Mac have both names and ID numbers, and there's the potential of clashes in either category once you start using fonts and accessories stored in separate files. "Calendar, " for instance, is a pretty popular generic name. I've also seen more than one font entitled "Boston." Both *Suitcase* and *Juggler* are forced to let the Mac use its usual resource-hunting priorities in the case of conflicts: any resource in the *System* wins, followed by the most recently opened resource file, then the next-most-recent file, and so on. Duplicate names don't appear in the Apple and Font menus, so you may not know you have a problem until an unexpected font or accessory shows up.

Because you can number desk accessories with anything up to 32,768, conflicting numbers don't occur that often. With fonts, though, ID numbers can only go up to 256, so conflicts are more likely to occur. When you have conflicting ID numbers, what you select is no longer what you get: select Boston

from the menu and you might get Concord displayed on the screen.

Font/DA Mover automatically resolves numbering conflicts by adjusting the ID numbers when you combine fonts into a single file. The *Suitcase* documentation suggests that you put all your conflicting fonts in one file with the *Mover* so there won't be any number clashes. The *Juggler* disk includes a separate utility, *Font Resolver,* that resolves numbering conflicts between fonts even if they're in different files. If you keep lots of fonts in separate files, this could be a significant plus in *Juggler*'s favor; however, because both *Suitcase* and *Juggler* require you to use another program to address the numbering problem, I see it as little or no advantage in the overall comparison of the products.

EXTRA ATTRACTIONS

With *Suitcase* and *Juggler* so much alike, perhaps their little extras will be able to persuade you one way or the other.

Suitcase comes with *Pyro!,* a screen-saver program that you can set to take over the screen at a defined interval. It also includes a preliminary version of *Power Station,* a nifty *Finder* replacement. *Juggler* comes with several small utilities and a bunch of public-domain fonts and accessories (which I could be more enthusiastic about if there were some brief documentation about some of the less obvious ones).

Both utilities handle FKeys (Command-Shift-number combinations that invoke some special routine), although *Suitcase* doesn't trumpet the fact. *Juggler* also handles Sounds that replace the Mac beep. In fact, by count, *Juggler* is way ahead on features and extra utilities. What keeps it from pulling ahead in the overall comparison is that most of the extra features and utilities are not necessarily significant. Sounds that replace the Mac's beep, for instance, are initially fun but quickly wear on you [*Says you! —Ed*]; if I replace the beep at all, it would only be in favor of something like *MORE*'s dignified little "blip." Font compression doesn't matter much when you have a hard drive. And so on. *Juggler*'s

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configurable hot keys for keyboard control of the menu are a clear advantage for those who can't or won't touch *ResEdit*. Another nice touch is the "preview" option that lets you see what's in a font or DA file before you bother opening it.

If you made your choice based on the documentation that comes with the programs, *Suitcase* would win. Its documentation is not great — it gets too technical too soon, and it doesn't emphasize enough for the beginner that a DA file can actually contain many DAs — but it's better than *Juggler*'s. *Juggler*'s documentation is adequate but awkward in places, and it has no index.

PERSONAL PREFERENCE

As I said in the beginning of the article, the *Suitcase* vs. *Juggler* issue can only be decided on a personal-preference basis. I have both programs (one of the perks of the software-review business), and it's *Suitcase* that's sitting at the top of my Apple menu these days — despite the fact that *Juggler* has some nice extras. Why? First, because I like *ResEdit* and changing *Suitcase*'s Command key was no big deal; this addresses its only real flaw. Second, because I find *Juggler* too modal. Even if you bypass the hierarchical menu with the Command keys, you can choose either the DA List, or the Font List, or the *Juggler* command dialog that lets you open and close files. *Suitcase*'s single dialog that does it all is more elegant, and I find it more comfortable.

LEAPFROG

Software Supply and Alsoft (and Olduvai) are engaged in an interesting game of leapfrog that can only benefit users. As each update for each program comes out, the others will look at it and decide to go one better. So, each update will be more powerful and have more features. All you have to decide is where to jump in on the game. Do it now because you can't lose.

SHARON ZARDETTO AKER IS A MACUSER CONTRIBUTING EDITOR AND A SOFTWARE DESIGNER.

MACUSER RATING

Font/DA Juggler Plus

★★★★

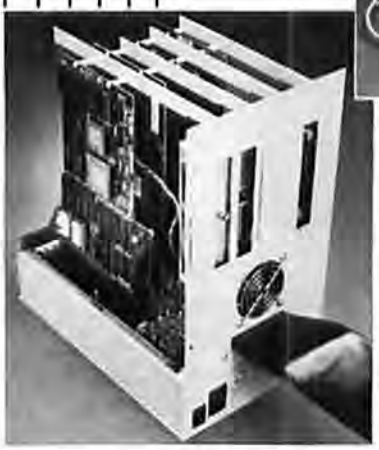
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Comments: A desk accessory that lets you have an unlimited number of fonts and DAs. **Best Feature:** Lets you get at any number of fonts and DAs without installing them in your system; it can handle startup sounds and FKeys as well. **Worst Feature:** Most of the little utilities that're provided would be better as part of the main package, so they would always be accessible. **List Price:** $59.95. Published by AlSoft, PO Box 927, Spring, TX 77383-0927. (713) 353-4090. Version 1.01 reviewed. Not copy protected.

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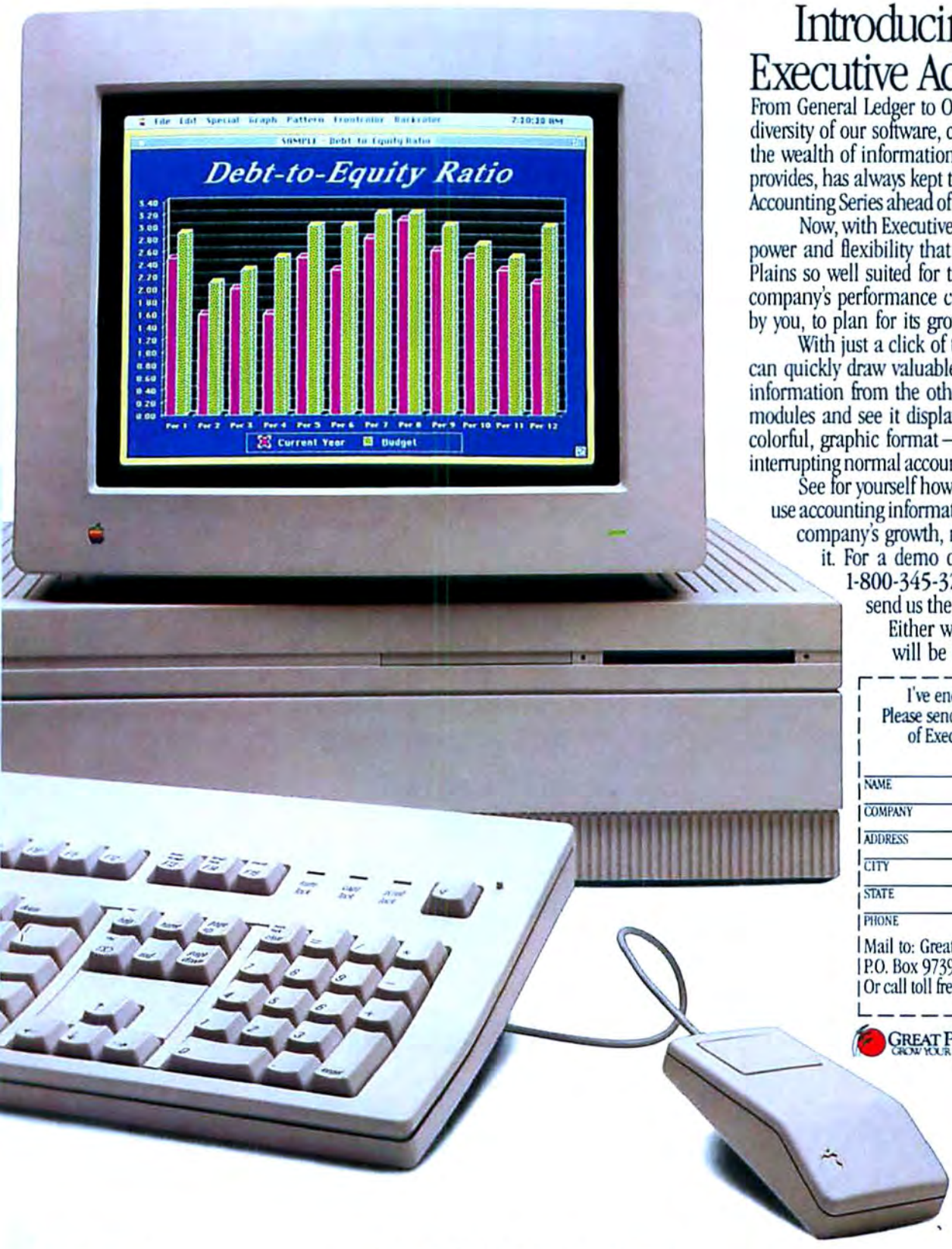


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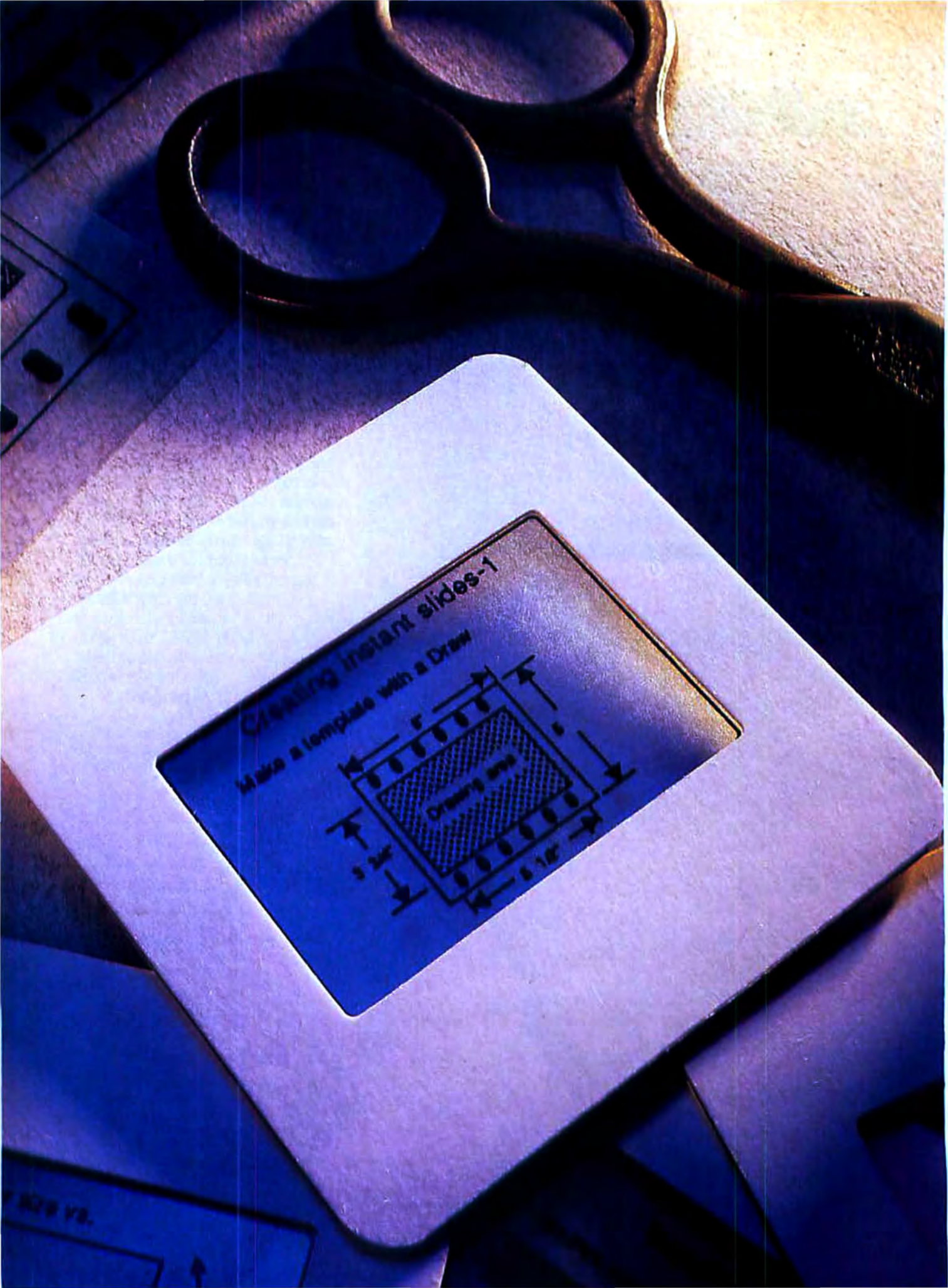
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Creating instant slides-1
Using a template with a Draw

Instant Slides

Behind in your presentation deadline? No time to turn around 35mm slides of your Mac's screen? Here's a solution that's as easy as cut and paste.

WITH THE MACINTOSH, YOU CAN EASILY produce and print high-quality graphics and text almost instantly. Unfortunately, 35mm projection slides made from the same printed material require either an expensive film recorder or sending the job out of house, which can take several days. On occasions when time is tight, there's a neat work-around you can use to convert images on the computer screen to good quality slides in less than ten minutes. The technique involves using the Apple LaserWriter to print reduced images directly on transparent plastic, which after being trimmed and mounted, can be projected immediately as slides.

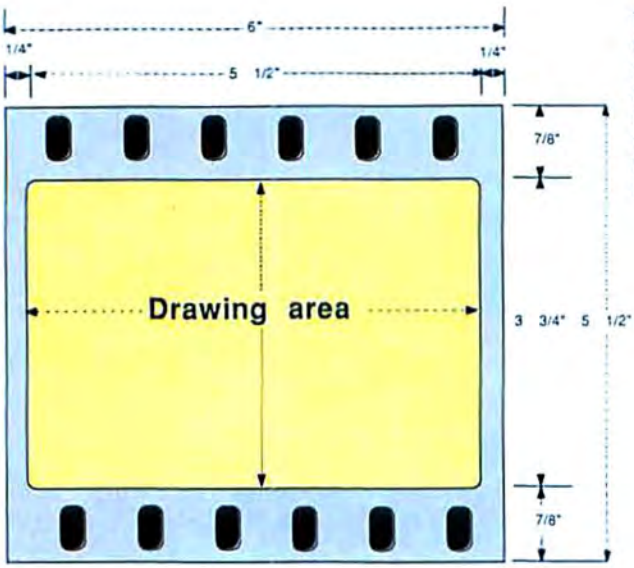
Fortunately, the size of the typical graphics window (such as those used in *SuperPaint*, *MacPaint*, or *Cricket Graph*) is approximately four times larger than that of a 35mm slide. Thus, you can print a drawing or text that fits within one window directly on plastic using a LaserWriter set at 25 percent of its original size. After trimming the image to the size of 35mm film, you insert it in a slide mount. The following discussion provides a step-by-step description of how to accomplish this, along with hints on how you can produce the best quality slides.

CREATING A TEMPLATE

To fit a 35mm slide mount, your images must print within a 1 5/16 X 7/8-inch rectangle, although you could use trial-and-error adjustments. It's best to construct a template delineating the maximum drawing size and the border needed for proper mounting. Use the rulers in *MacDraft*, *MacDraw*, *SuperPaint*, or *Full Paint* to create the template. Rulers in some programs may be inaccurate, so print the full-size template and verify its dimensions. *SuperPaint* preferences should not have a check in the box "Rulers match printout from LaserWriter" because the tem-

BY HAVEN C. SWEET

GARY BUSS



The slide template can be made with a Draw program. You can simulate the sprocket holes of real film to help you align the transparency film in a slide mount.

plate is corrected for this discrepancy.

I prefer to produce a template using a Draw-type program rather than a Paint one because it's both easier to produce and faster to print. After creating two rectangles of the proper dimensions, you can easily position them to provide the proper margins. Add sprocket holes as a reminder not to draw in the border, then GROUP the entire image and save it. If the figure is kept in the Scrapbook, label the center of the slide so something is visible in the Scrapbook window.

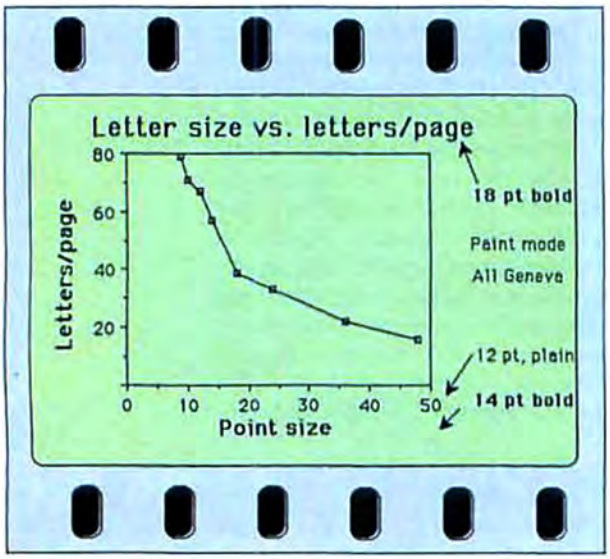
DRAW VERSUS PAINT

You can use any Draw, Paint, or combination program to create an image, although each has advantages and disadvantages. When selecting a program, you should consider several factors.

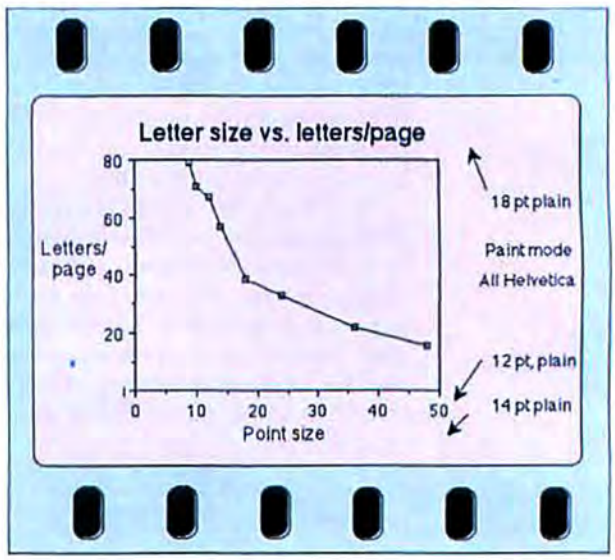
Draw programs properly print font sizes that are not in the *System* (that is, they do not appear hollow in the menu bar) whereas Paint programs reproduce the distorted letters appearing on the screen. Images created in a Draw program can print in 50 seconds whereas the same image in Paint takes about 6 minutes to print. Typically, only six to eight different Paint slides can be produced in an hour.

Patterns created in Draw programs, because they are not scaled to one-quarter their original size, produce bizarre and unexpected results. Patterns in Paint programs will be resized to scale, although some may appear muddy. Lines created in a Draw program are thicker and are not as refined as those created in Paint programs. Contrary to your experience with printing full-size images, the overall quality of a reduced image printed in the Draw mode is definitely inferior to the same picture generated in the Paint mode.

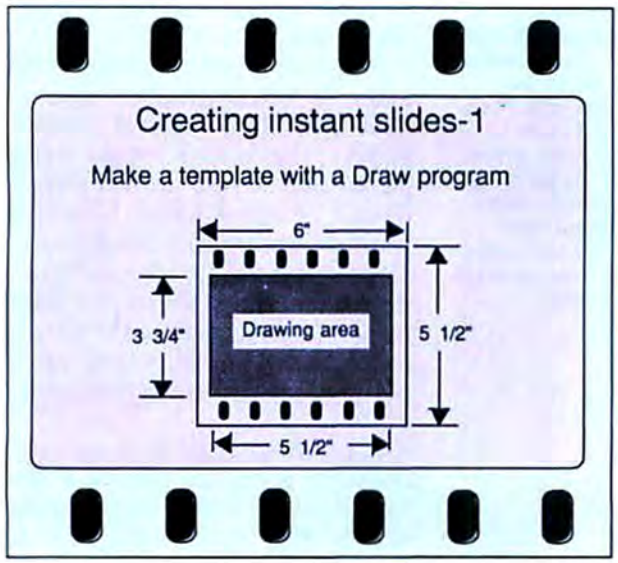
Because of all these considerations, no single method is best for all circumstances. I find that figures containing only text, lines, and boxes are acceptable when generated using a Draw program (*MacDraft*, *MacDraw*, or the draw side of *SuperPaint*), especially if I need to print many slides. The availability of all

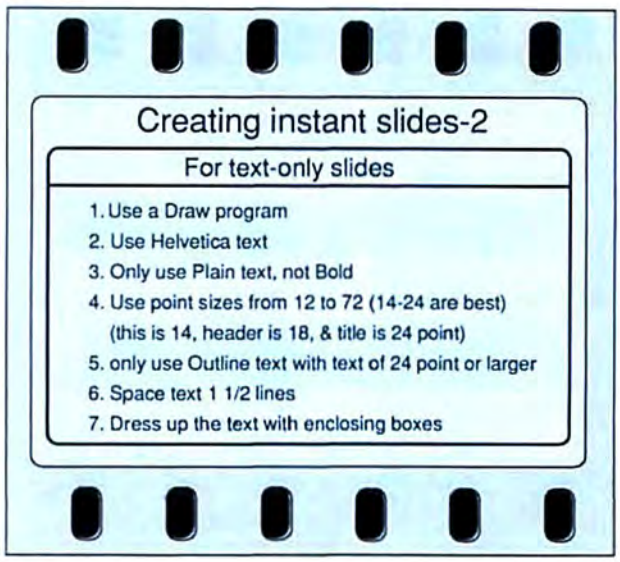


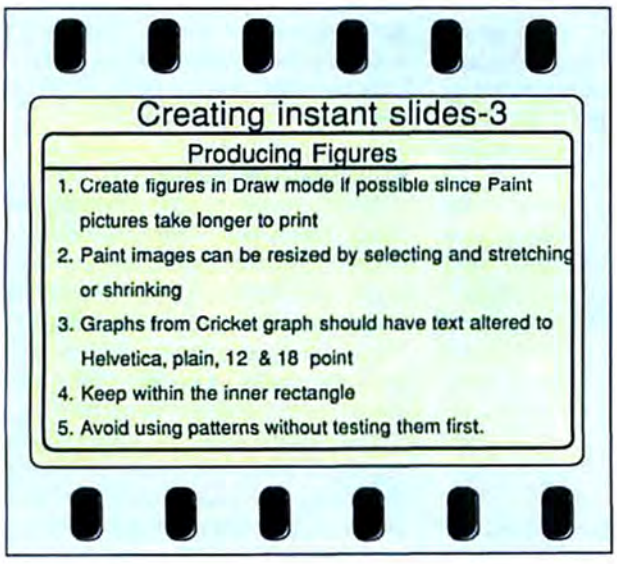
This is the best quality possible for a Paint-produced slide. The figure was created in *Cricket Graph* using Geneva type, then placed on the slide template in the Draw side of *SuperPaint*. The image was converted to Paint and printed. Printing time was 5 minutes, 45 seconds. Note that bold type is acceptable and the lines are thinner than those of the Draw-produced slide.

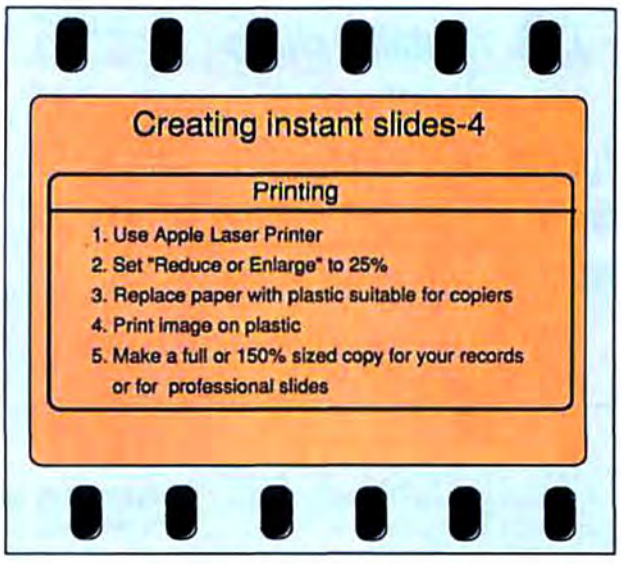


This Draw-produced slide is not of as high quality but was printed substantially faster. The *Cricket Graph* figure with Helvetica type was placed on the slide template in the Draw side of *SuperPaint* and then printed. Printing time was 50 seconds. Note that the lines and type are all thicker than those of the Paint-produced slide; 14-point text is the smallest for quality work.







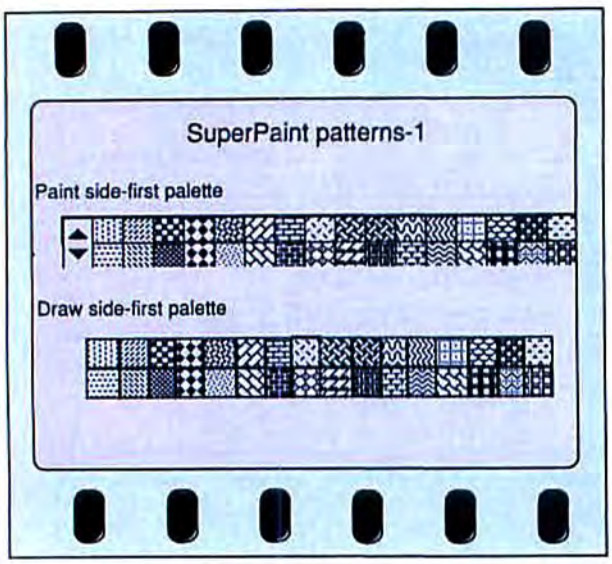


These Draw-produced slides are acceptable because they are mostly text. They were produced in *SuperPaint* and then copied into *MacDraw* via the Clipboard to produce multiple slides per sheet. Note that the pattern in the first slide did not reduce to scale. Had these been printed as Paint images, the quality would have been better but they would have taken much longer to produce.

letter sizes and the faster printing speed compensate for the thickened appearance of letters after reduction.

Always choose Plain Text because all letters appear bold when reduced, and use a LaserWriter font so the font appearing on the screen is not substituted for (and the spacing of the figure altered) during printing. I use Helvetica with a text size of at least 14 points to ensure readability; 14, 18, and 24 point appear to be the best. Outline text fills the letters and looks ragged unless the font is 24 points or larger. You can type text directly into the template, or you can import bullet charts created with presentation software.

For the highest quality text-only slides, however, use a Paint program with the fonts that look best on the screen. Geneva is a good choice; I keep my *System* file loaded with every available point size. You can use bold styles as an accent to Plain Text, and even 12-point type is clearly legible when reduced. Because it's faster to create text-only figures in a Draw program, however, I prefer *SuperPaint*. Using the Draw mode, you can revise text or alter the font, style, spacing, or line length at any time, thereby quickly generating a properly proportioned image. Once you've created it, save the Draw version for subsequent revision. Then SELECT



Here's the result of printing Paint and Draw patterns. The patterns in the top and bottom figures (the palette from *SuperPaint*) were identical on the screen; however, the top palette was captured in Paint mode whereas the bottom one was created in Draw mode. All text is in Draw mode.

Although these "instant" slides are not of the very highest quality, they are fast and economical to produce with this "quick and dirty" method.

ALL, followed by COPY TO PAINTING, and press Backspace to erase the Draw version. Print the Paint image, but expect a 6-minute wait.

You can print charts you create using *Cricket Graph* in either mode. For Draw mode (or direct printing by *Cricket Graph*), change all text to Helvetica and increase the size to 12 points for the numbers (although they may not all print clearly), 14 points on the axis labels, and 18 points on the heading. If you print directly from *Cricket Graph*, the reduced graph will fit on a slide if you do not resize the graph's initial window (you cannot import the template into *Cricket Graph*). To produce a high-quality image, resize the type as described earlier (assuming all are in your *System* file) but use the Geneva font, copy the graph to a Paint program via the Clipboard, and superimpose it on the template.

Drawings printed from Paint programs closely resemble the proportions you see on the screen and are usually worth the extra printing time. All lines are thinner than those from Draw programs, and patterns are more accurately reproduced. Be cautious about using patterns without testing them first, however. You should write text in the font that looks best on the screen and should never generate it. Although inverted figures or large expanses of solid black appear dramatic on the screen, they are of poor quality when reduced.

PRINTING THE SLIDES

Although other brands of printers also work, I performed all my tests on an Apple LaserWriter Plus. When ready to print, use PAGE SETUP to adjust the Reduce or Enlarge value to 25 percent. Replace the printer's paper with plastic sheets that are suitable for Xerox copy machines — for example, Scotch 3M 502 Transparency film or Pro-Tech Laser Transparency film from James River Corporation. If the plastic has a paper backing, place the paper side up. If there is no backing, place the rougher side (the surface that receives the image) down. It's important to use the proper material because the printer's heat will melt some plastics. Avoid getting fingerprints on the surface because they may prevent the toner from adhering to that area.

If you print with a different computer or *System* from the one you used to create the figures, carefully inspect the screen image before printing to be sure the text was not resized or repositioned. Check the printed figure with a hand lens before closing the file to ensure toner didn't flake off. It's also prudent to print a full-size copy of the slide on paper so that a quality slide can be photographed for your next presentation.

If printing single slides, you can conserve plastic by cutting a sheet into thirds so each strip is approximately 8½ inches wide and 3— inches tall. When selecting PRINT from the File menu, change the Paper Source from Paper Cassette to Manual Feed. Insert the strips into the single-sheet feeder just as you would an envelope, being sure to have the surface to be printed on facing up.

MOUNTING THE SLIDES

If you want to add a background color, use a pen with water-soluble ink to color the upper surface of the print completely. Then rinse off the ink to leave a wash of color. Alternatively, you can include colored gels, available from photographic supply stores, in the mount with the image.

It's easy to trim the images using scissors if the paper backing is below the plastic. A variety of slide mounts are available, although some require precise fit of the film and thus are more difficult to use for this application. I prefer plastic mounts that open so the image can be taped in the correct position. Because the inner border of the slide may also be projected, it's important to mount it squarely within the frame.

Although these slides are not of the very high quality audiences expect from professionally photographed Macintosh graphics, they are fast and economical to produce with this "quick and dirty" method.

HAVEN C. SWEET IS A PROFESSOR OF BIOLOGY AT THE UNIVERSITY OF CENTRAL FLORIDA IN ORLANDO.

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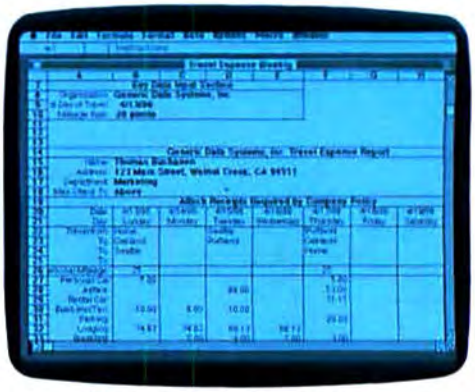
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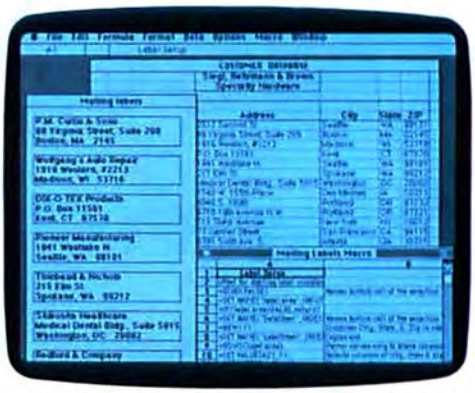
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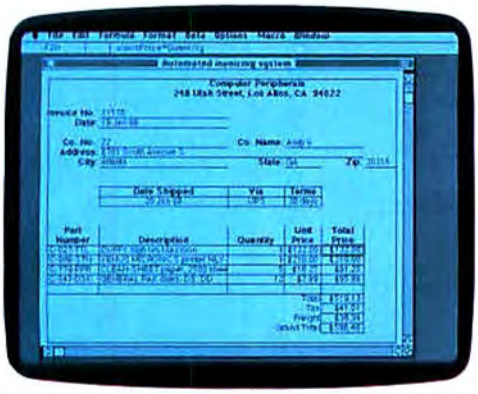
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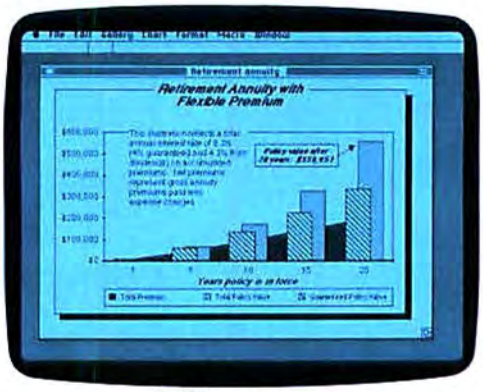
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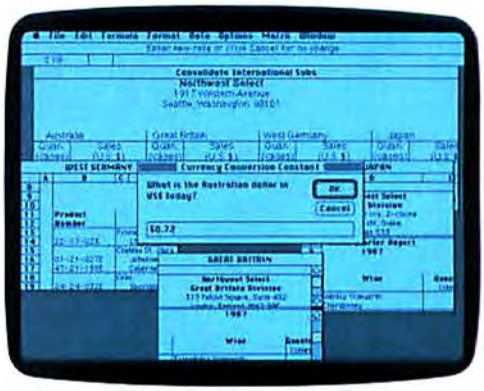
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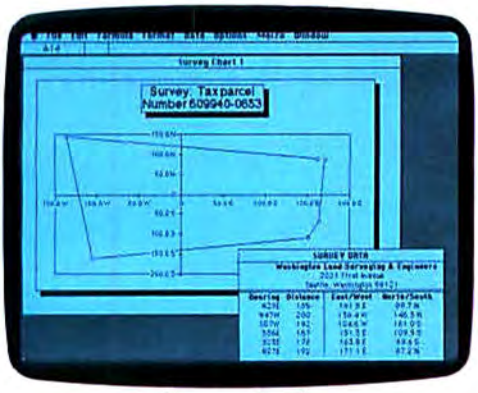
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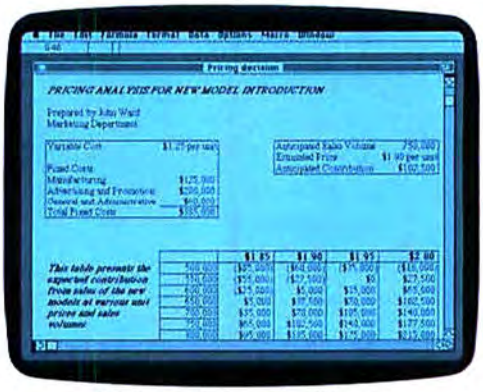
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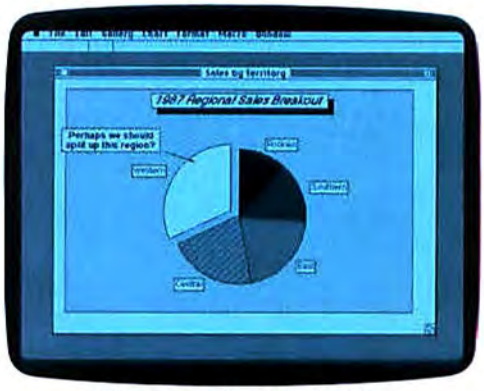
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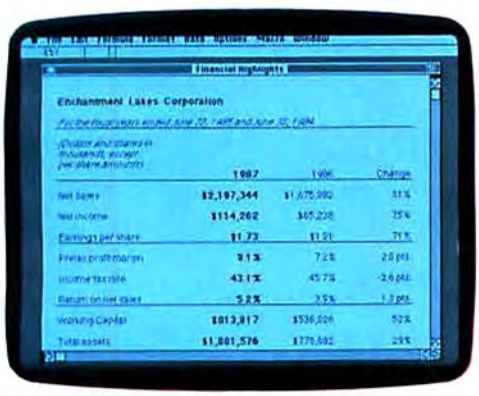
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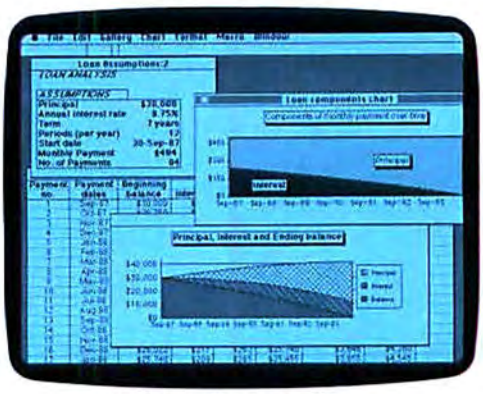
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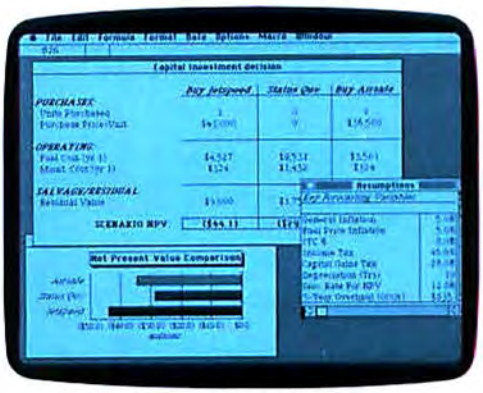
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TOM UPTON Photographed at the Peninsula Fountain and Grill

The Write Choice?

Microsoft wants into the low-end word processing market, but is Write the right move?

THIS IS THE AGE OF TRICKLE DOWN. First, it was trickle-down economics; now it's trickle-down marketing. The strategy is simple: Introduce a high-priced, high-powered, high-end product; hype it for all it's worth; and when interest wanes, release a similar — but lower-priced and lower-powered — package aimed at the consumers who were unwilling (or unable) to buy (or to afford) the top of the line.

The latest example of this approach comes from Microsoft. It's called *Microsoft Write,* and the publisher describes it as a "streamlined subset of *Microsoft Word,*" which is a euphemistic way of saying it's the same program with several features left out. Intended as an entry-level word processor, *Write* is a simplified, no-frills program that doesn't include such power features as style sheets, an integrated outliner, custom menus, glossaries, mail merge, page-layout features (such as boxes), side-by-side paragraphs, or any number of other specialized functions found in *Word.* If you've ever had any problems using *Word,* though, you'll probably have the same problems using *Write.* If anything, *Write* is one program that unabashedly shows its roots.

THE WRITE STUFF

Launching *Write* immediately transports you into the idiosyncratic world of Microsoft word processing. Like *Word* from Version 1.0X on, *Write* does not feature dynamic pagination, so each document appears as a continuous scroll without on-screen page breaks. Page breaks become visible only after you select PAGE PREVIEW from the File menu or REPAGINATE from the Document menu.

Once you get past this stage, however, *Write* performs the basic word-processing operations such as cutting, pasting, and simple formatting quite well, and you don't run into any more Microsoft quirks until you mess around with multiple-column formatting, about which more later.

For a low-end word processor, *Write* packs a full complement of features, many of which hint teasingly at what can be found in *Word* 3.01, whereas still others are holdovers from the bigger program.

HAND-ME-DOWNS

Write's spelling checker falls into the latter category. Yes, this is the same, expandable 80,000-word dictionary that's included with *Word,* and no, Microsoft has not incorporated a word count into this one either. It is, however, very fast, and easy to use — as is *Write* in general.

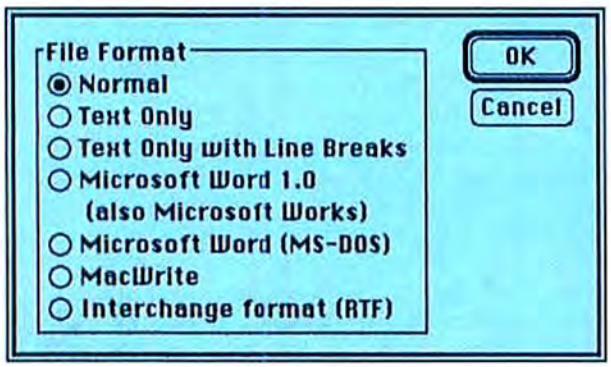
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BY RUSSELL ITO

The Write Choice?



Write's PAGE PREVIEW command is identical to *Word*'s. The icons on the left let you see the document in magnified view, position page numbers, change margins and page breaks, and choose a one- or two-page view.



Choices, choices. *Write* can save a document in any of seven different formats, but, remember, it doesn't save the document you're working on — it saves a *copy* of that document. Giving the file an identifiable name is extremely important, unless you enjoy chaos.



Selecting a column in a table is just an Option-drag away. Once you've selected it, you can perform any of the normal formatting functions you'd expect. The highlighted icon is the Vertical-line icon, which will insert a vertical line in the document at whatever point it is placed on the ruler.

your document in reduced view (either one or two pages at a time), change margins and page breaks by dragging a line, and place page numbers. You cannot, however, edit text; to do that, you have to return to the normal mode.

The FOOTNOTE function is a good example of a simplified *Word* feature. When you select the FOOTNOTE command from the Document menu (or type Command-E), *Write* opens the Footnote window at the bottom of the current window and enters a reference number in the document and in the Footnote window. *Write* will continue to number the footnotes automatically and will renumber them if you add any more notes. You also have the option, in the Page Setup window, of having the notes appear at the bottom of the page or as end notes.

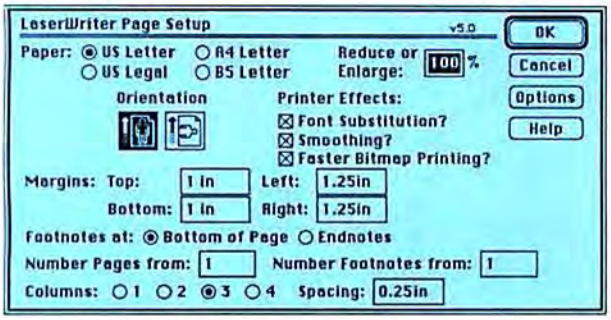
The difference between *Write*'s footnotes and *Word*'s is largely a matter of degree. *Word*, for example, gives you the choice of using your own specifically defined characters (such as asterisks or letters) instead of numbers, as well as a choice of separators, to divide your text from your footnotes. *Write* does not. Admittedly, these aren't the types of features most people are likely to use — or need — on a daily basis, but the differences provide a good example of the kind of editing Microsoft employed in producing *Write*.

YOUR CHOICE OF SAVINGS PLANS

For compatibility, *Write* lets you save a document in one of seven different formats: Normal (i.e., as a *Write* or *Word* document), Text Only, Text Only with Line Breaks, MS-Word 1.0 (also MS-Works), MS-Word (MS-DOS version), MacWrite, and Interchange (or Rich Text Format). All this flexibility is great, but you need to observe one caveat. When you choose to save a document in a format other than Normal, *Write* does not save the on-screen document but instead saves a translated copy of the document. Therefore, you have to be careful to give this translated copy a name that distinguishes it from the *Write* version; otherwise you run the risk of chaos. What's more, if you make any changes to the *Write* document, those changes will not be reflected in the translated version when you save because the translated document isn't linked to the *Write* original. To get your changes to appear in a translated version, you must choose SAVE AS and retranslate the edited document, making sure that you name it in a way that distinguishes it from or writes over any earlier version. Because the translation process is so inelegant, use it only on finished documents; using it on drafts is too much trouble.

PICKING A COLUMN AND PORTING A GRAPHIC

A special feature that *Write* shares with *Word* is the ability to select and format a column within a table. To do this, set up a table using the tab stops on the ruler (you have a choice of flush left, flush right, centered, or decimal), and end each row of entries with a Shift-Return, which allows the table to be formatted as one paragraph. To select a column, simply Option-drag across it until everything you want is highlighted. That



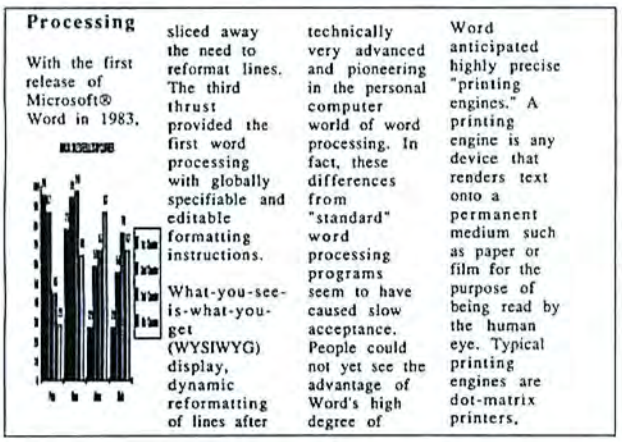
You choose the multiple-column option with the radio buttons at the bottom of the Page Setup window.

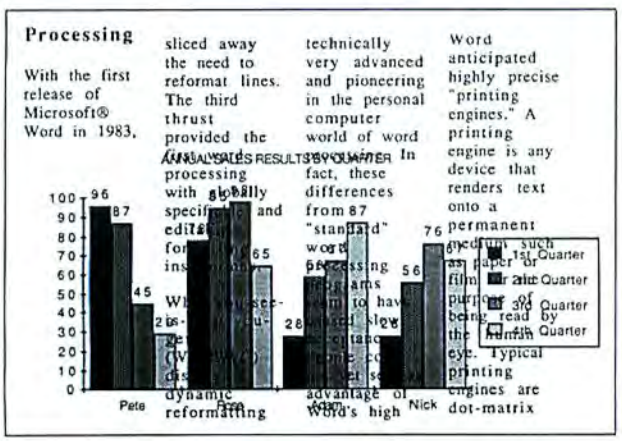
done, you can then change fonts or font sizes, add italics and boldfacing, cut, copy, paste, or whatever.

Write also allows you to mix graphics and text, although why a program intended for the — in Microsoft's own words — "casual word processor" even needs graphics importation is a good question. Nonetheless, it can be done.

Importing graphics is essentially a cut-and-paste operation. After creating an image in a graphics program or after selecting a piece of clip art, copy it to the Clipboard, quit the graphics program (or use *Switcher*), and enter (or reenter) *Write*. Position the cursor where you want the artwork to appear and choose PASTE. *Write* will then pop the image into place. Unlike some programs, *Write* allows text to reside on the same line as a graphic, but it will not flow text around an image (a missing feature that creates big problems when you format a document in multiple columns).

Once you have pasted in the graphic, *Write* allows you to crop, resize, or scale it, but, surprisingly, the latter feature isn't mentioned in the manual. To crop or resize a graphic's frame, click on it to select it, then drag one of the "handles" until the frame is the desired size. To rescale (that is, to shrink or enlarge) an entire image, follow the same procedure, but Shift-drag the handles.





A choice of nightmares. Graphics and multiple columns in *Write* do not get along. This *Excel* chart was pasted into the document, and without text flow, *Write* superimposes the graphic over the text. Scaling the chart renders it unreadable even before it's narrow enough to fit into one column.

THE WRONG STUFF

In general, *Write* handles the basics of word processing quickly and well, but it starts getting into trouble when you ask it to do things that it really isn't equipped to handle. It's almost as if Microsoft deliberately included some less than ideally implemented high-end features so that users would get annoyed and rush to place their upgrade orders. There is no better example of this problem than *Write*'s multicolumn option.

The whole idea of multiple columns in a program such as *Write* seems odd to begin with. After all, people who just want to write a memo or occasional letter usually don't need to put their writing into columns, and yet Microsoft says those are the people at whom *Write* is aimed. It's this feature — more than any other — that suggests that Microsoft views *Write* as an expensive come-on for *Word*.

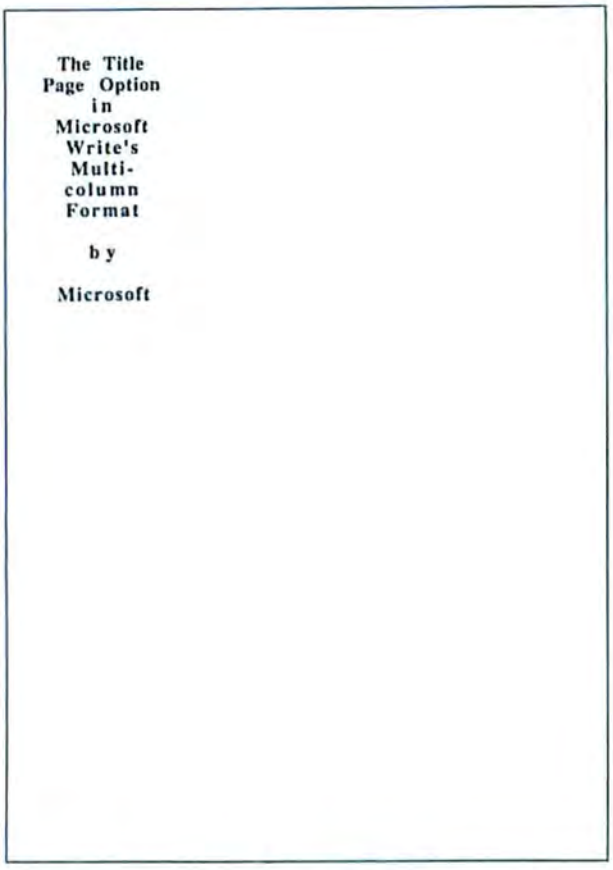
MULTIPLE HEADACHES

Microsoft has had a long-standing love/hate affair with multiple columns, and *Write* keeps that ambivalent relationship intact. As anyone who's ever used *Word* knows, Microsoft supports multiple columns; it just doesn't want you to see them.

Write's multiple-column feature is both simpler to use and more limited than *Word*'s. In *Word*, you have the choice of newspaper-style snaking columns or side-by-side paragraphs. The number of columns is left up to you, provided you do some basic arithmetic and make sure that the number of columns plus the space between them does not exceed the width of the paper minus the margins (got that?). In *Write*, the choice is easier: snaking columns or nothing.

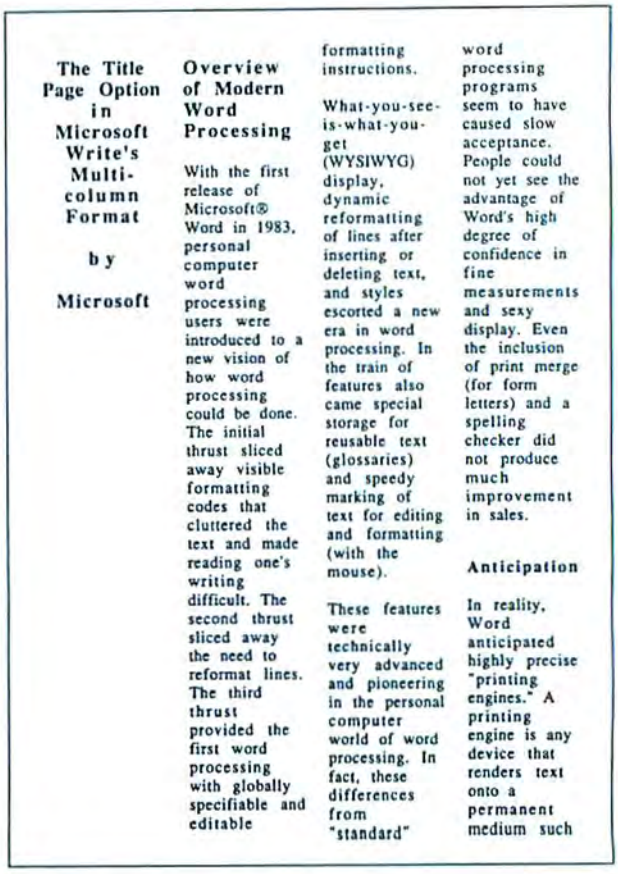
To use *Write*'s multiple-column format, choose the PAGE SETUP command from the File menu. At the bottom of the Page Setup window is a row of four numbered radio buttons for the number of columns you desire (one is the default) and a box

The Write Choice?


The Title Page Option in Microsoft Write's Multi-column Format

by

Microsoft


The Title Page Option in Microsoft Write's Multi-column Format

by

Microsoft

Overview of Modern Word Processing

With the first release of Microsoft® Word in 1983, personal computer word processing users were introduced to a new vision of how word processing could be done. The initial thrust sliced away visible formatting codes that cluttered the text and made reading one's writing difficult. The second thrust sliced away the need to reformat lines. The third thrust provided the first word processing with globally specifiable and editable formatting instructions.

What-you-see-is-what-you-get (WYSIWYG) display, dynamic reformatting of lines after inserting or deleting text, and styles escorted a new era in word processing. In the train of features also came special storage for reusable text (glossaries) and speedy marking of text for editing and formatting (with the mouse).

These features were technically very advanced and pioneering in the personal computer world of word processing. In fact, these differences from "standard" word processing programs seem to have caused slow acceptance. People could not yet see the advantage of Word's high degree of confidence in fine measurements and sexy display. Even the inclusion of print merge (for form letters) and a spelling checker did not produce much improvement in sales.

Anticipation

In reality, Word anticipated highly precise "printing engines." A printing engine is any device that renders text onto a permanent medium such

When is a title page not a title page? When it's a title column! Inserting one page break after the text puts the title text into its own column but not its own page. Inserting the same number of page breaks as columns results in a true title page, but the text is squashed into one column.

in which you can specify the amount of space between columns. After making your choices, click on OK (or type Enter or Return) and voilà! Your document will now appear on-screen in Microsoft's version of multiple columns: a single, skinny column running down the left side of the screen. To actually see on-screen how the document will be printed, you have to choose PAGE PREVIEW, but remember, if you want to do any editing, you'll have to go back to normal view.

At this point, some problems may occur — for example, you look at the screen and only part of your text is there. What's probably happened is that you set the column spacing too wide, so you should try entering a smaller number in the spacing box. (You can either do the arithmetic described earlier or use trial and error.) The important thing to remember is that *Write* will not warn you if your spacing is incompatible with the number of columns and margins, which points out another oddity. Because Microsoft has already limited the number of columns to a maximum of four, it could just as easily have gone ahead and set the column spacing to a fixed value based on the number of columns, because this is supposed to be a back-to-basics word processor. The spacing box is an unnecessary extra step, and it's hard to understand why Microsoft thought it was important enough to include it.

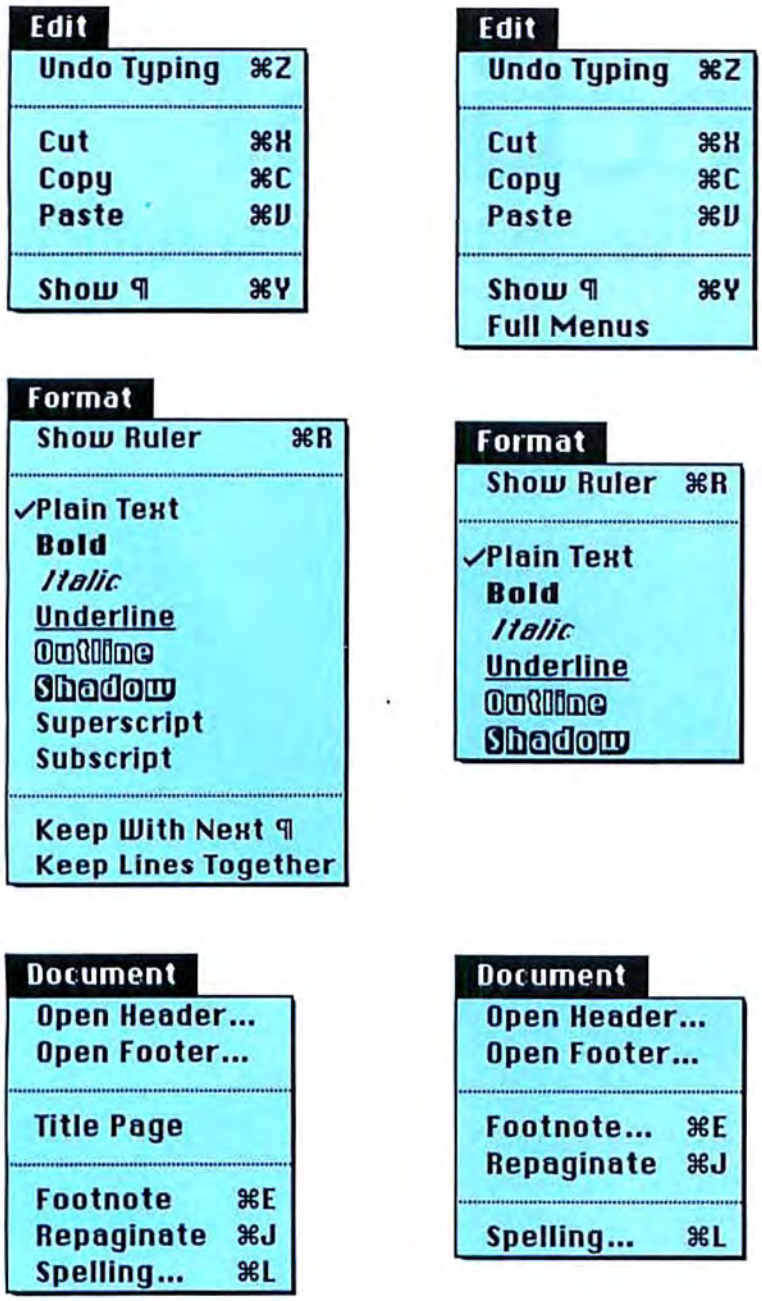
MY CHART RUNNETH OVER

But if you think the spacing feature is odd, wait until you try combining multiple columns and graphics. If the imported graphic is wider than one column, *Write* doesn't respect it. Instead, it simply lets the graphic flow over the text in the next column(s), and, unlike *Word,* which lets you correct the problem by placing the graphic in a separate section, *Write* doesn't have an acceptable solution.

In this situation, your choices are either to forget about multiple columns or to keep the multiple columns but rescale the graphic. Assuming it's important to keep the document in multiple columns, rescaling is the only option, but it comes with severe limitations. As long as the graphic is a relatively simple piece of clip art, rescaling should be acceptable, but if that graphic contains important information (an *Excel* chart, for example), you'll find that rescaling renders any text unreadable — generally well before it's been reduced to the desired size.

THE TROUBLE WITH TITLE PAGES

But wait! The fun doesn't stop there. *Write* offers a Title Page option that prevents headers, footers,



Who's *Write*? A side-by-side comparison of the Edit, Format, and Document menus from *Write* and *Word* 3.01 (Short Menus option). (By the way, the *Write* menus are on the left.)

or page numbers from appearing on the first page. It's a good idea and makes it much easier to create a title page in *Write* than in *Word,* but unfortunately, the multiple-column option works globally, so the title page is formatted into columns along with the rest of the document.

To separate the title-page text from the body of the document, you must insert a page break, but *Write* interprets page breaks in multicolumn format as *column* breaks. As a result, if you enter one page break after your title, your "title page" will actually appear as a title *column,* with the body text starting in the second column on the same page. (If it's any consolation, however, there won't be any headers, footers, or page numbers on that page.)

If you're still determined to have a title page, *Write* requires you to enter as many page breaks as you have columns, which results in the bizarre sight of a few lines of text followed by two, three, or even four page breaks. Remember, though, that the title page is also going to be in multiple columns, so your title will not spread across the page but instead will be squashed into a narrow column. The only solution is to create the title page as a separate document and to start your page numbers at 2. As was the case with graphics importation, Microsoft included a nice feature and then didn't follow through to make sure it worked properly.

HAVEN'T I SEEN YOU BEFORE?

Write's pedigree is one that you will no doubt be seeing more of in the near future. It's a devolved hybrid, but this raises questions about the product itself.

Write is supposed to be a word processor for, again in Microsoft's own words, "customers who write short memos, letters and other simple documents," but *Word* 3.01 comes with a Short Menus option that limits *Word*'s power and accomplishes much the same thing. In fact, a comparison of *Word*'s menus in this mode and *Write*'s menus reveals that they're virtually identical. The difference is that when *Write* users need more power, they have to pay a substantial upgrade fee; *Word* users already have the power and aren't stuck with a white-elephant program of limited utility.

Even Microsoft seems confused when it comes to separating the two programs. An overview document in the Sample Documents folder does not mention *Write* at all, but *Word* is mentioned 22 times. In an overview document that accompanied my review copy, *Write* was misidentified as *Word* three times, and fully a third of the document was spent hyping features that *Write* doesn't even offer, such as style sheets, integrated outlining, and custom menus. What's more, you get a good idea of where Microsoft is headed when you unpack *Write* and find that the largest item in the box, after the mouse pad and manual, is the *Word* upgrade card.

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Shift Lock Key	Yes	No	No
MTBF*	21.7 years	0.9 years	7.5 years
Guarantee/ Warranty	Lifetime Guarantee	90 day Warranty	90 day Warranty

*MTBF (Mean Time Between Failure)



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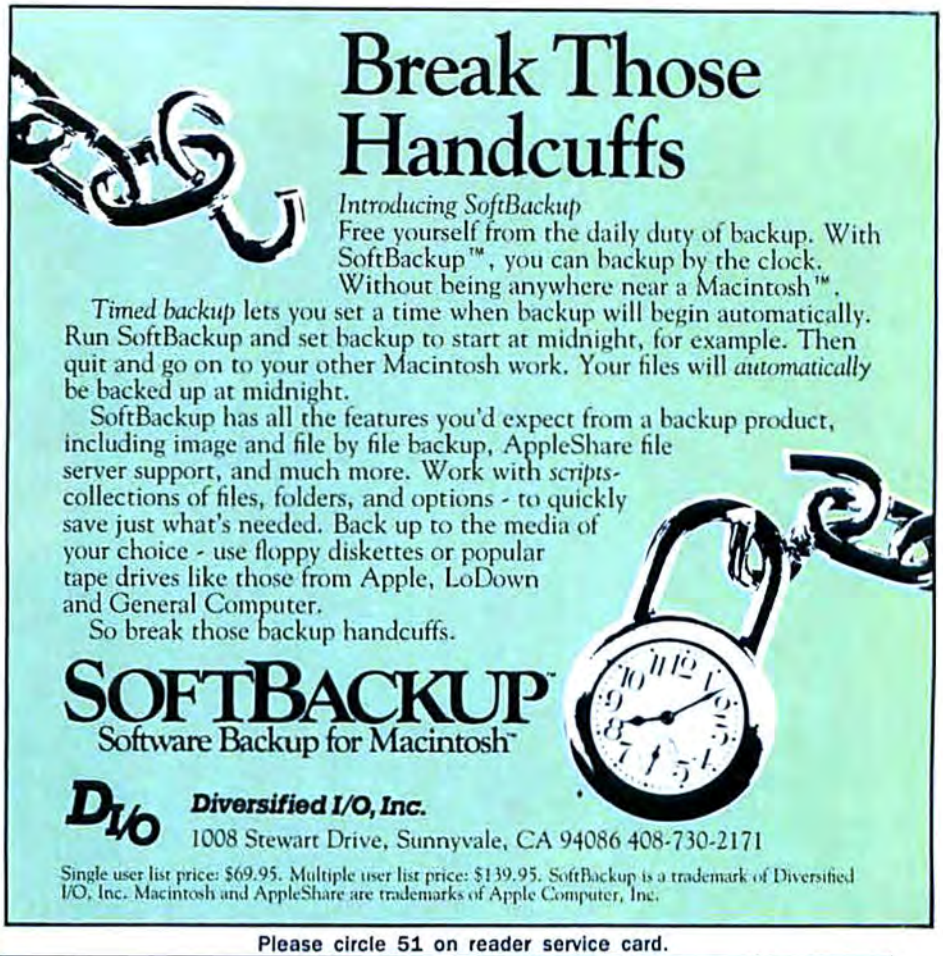
The Write Choice?

KNOWING YOUR WRITES

Write is one of the first of a new generation of trickle-down, knock-off programs, and it probably won't be the last. Although it does its assigned tasks reasonably well, it doesn't do anything *Word* 3.01 can't do better. What's more, *Write* is a poor value. *Write*'s street price is around $110, and *Word*'s is about $240; Microsoft's upgrade price from *Write* to *Word* is $220, however, which means that the total cost of the upgrade is $90 more than the cost of buying *Word* in the first place.

For anyone considering buying a word processor, *Word* 3.01 is still the powerhouse of choice, and even if you don't need all its features right now, you can take comfort in the fact that that power is only one command — vs. an upgrade card and a check — away. And if learning time is an issue, *Write* isn't going to save you anything there either because it's not substantially easier to learn than *Word* is. Given the choice, spend a little more now, and you'll save money in the long run. Go for the source, and pass up the trickle.

RUSSELL ITO IS AN ASSISTANT EDITOR AT MACUSER AND FREELY ADMITS THAT WORD 3.01 IS HIS WORD PROCESSOR OF CHOICE.



Please circle 51 on reader service card.

Finding a Word Processor That's Jussst Right

In the beginning, choosing a word processor for the Mac was easy — there was *MacWrite*, period. Not only was it the only one available, but it was also free. Now, things are more complicated. Programs such as *Microsoft Word* 3.01 have expanded the application's domain into page-layout territory, and *FullWrite Professional* and *WordPerfect* promise to go even further. All of which leaves someone who's looking for a simple, basic word processor in a quandary.

Fortunately for that person, such programs are available, and the first one to consider is — surprise, surprise — *MacWrite*. In its latest incarnation (Version 5.0) from Claris (remember, it's not Apple anymore — it's Claris; once again, Claris), this venerable program has had most of its earlier limitations, such as its dearth of Command-key equivalents, and its file-size restrictions, removed, and a spelling checker has been added. It still doesn't let you open multiple documents, which makes cutting and pasting material between files extremely laborious, and it doesn't offer multiple-column formatting, but for anyone writing letters, memos, or short reports, it's probably more than enough.

For those needing more power, there's T/Maker's *WriteNow*, a program that looks and feels like *MacWrite* but that also lets you have multiple documents and columns on-screen and adds features such as gutter margins.

Of course, planning for the future is important. You don't want to lose the use of your older documents just because you decide to switch to a high-end program a few years later. For people who want to keep this option open — and it is a good idea — *WriteNow* (Version 2.0) is an excellent choice because you can save your documents in Interchange (or Rich Text Format), which programs such as *Word* 3.01 can read directly. The advantage over programs such as *MacWrite* that can save only in straight-text format is that RTF files retain their formatting, so you won't have to reformat manually in the bigger program. This difference may not sound like much of an advantage, but if you have a lot of files, or even just a few large ones, it can be a real time-saver.

A good, low-end word processor must be easy to use and learn but still offer enough features to remain flexible as your needs change. For these reasons, buyers on a budget would do well to consider *WriteNow*.

MACUSER RATING

Microsoft Write ¢¢¢

Follows Mac Interface	■	■	■	■	□
Printed Documentation	■	■	■	■	□
On-Screen Help	■	■	■	■	□
Performance	■	■	■	□	□
Support	■	■	■	□	□
Consumer Value	■	□	□	□	□

Comments: Microsoft's entry into low-end word processors, a "subset" of *Word* 3.0. **Best Feature:** A full-featured (but not turbo-charged) word processor with good speed. **Worst Features:** Big problems in multiple-column mode; no on-screen multiple columns or dynamic pagination; poor consumer value and expensive upgrade path. **List Price:** $175. Published by Microsoft, 16011 N.E. 36th Way, P.O. Box 97017, Redmond, WA 98073-9717; (206) 882-8080. Requires 512K+ and 800K drive. Not copy protected.



And Now Presenting...

The right combination of hardware and software can turn a drab presentation into a multimedia success.

THIS IS AN ARTICLE ABOUT DESKTOP presentations. Except that it isn't. It's actually about desktop publishing. But not really. It is about the potential of the Macintosh as a creative presentation tool, wherein it does more than merely simplify the show-and-tell process. To paraphrase Marshall McLuhan, the Macintosh *is* the message.

The confusion here is a result of the need for catch phrases and simplistic ideas — in other words, marketing. "Desktop presentations" mean slide shows and overhead transparencies that accompany lectures or discussions and the handouts that go with them.

You know about presentations of this kind: They're the class lectures and sales meetings that you've slept through most of your life. On the rare occasion when you didn't doze off during a presentation, it was usually because a dynamic individual made the topic interesting. Rarely was the written or visual information enough to keep your attention by itself.

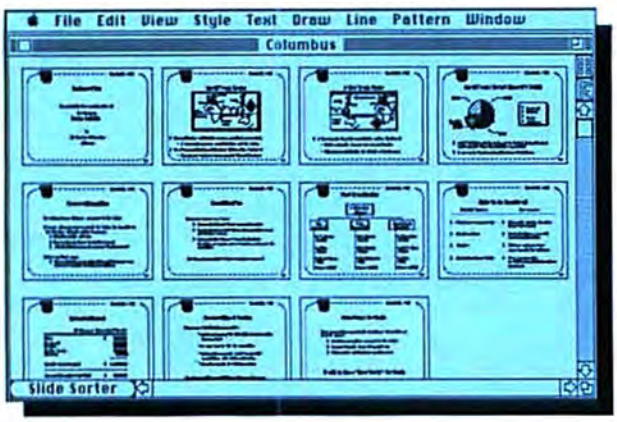
But there's a change in the air. When desktop publishing began, there were a frightening number of poor, if not downright ugly, desktop publications because most people didn't yet know what to do with design or how to plan a page to make it interesting. If history repeats itself, we'll have to endure plenty of mediocre desktop presentations over the next several months. But if the analogy continues to hold, it won't be long before we begin to see some incredibly innovative and exciting Macintosh-based presentations.

Computers, especially the Mac, make it possible for people to do things they couldn't otherwise do because of a lack of skill or resources or both. By pushing the Macintosh to its limits, you can transcend your own limits.

You can use the Mac at every step

BY MICHAEL D. WESLEY

JENNY ADAMS



PowerPoint's Slide Sorter makes it easy to see the entire layout of a slide show and reorder slides if necessary.

of the presentation process — before, during, and after — including:

- brainstorming for ideas
- organizing and outlining your thoughts
- preparing text and artwork for your own notes and for handouts
- displaying animation or sequences of screens on the Mac's screen. For large groups, you'll need some pricey hardware to project the display, but small groups can sit around a Mac or a full-page display monitor.

And don't stop there. When appropriate, incorporate sound into the presentation. Digitized sounds require a lot of disk space, but they can be a lot of fun. You can also use the Macintosh as a front-end control system for other audiovisual equipment, such as driving actual slide projectors, videodiscs, or tapes. Develop evaluation and feedback forms on the Mac and use them to tabulate the results to analyze the effects and effectiveness of your presentation.

You can do much of this using familiar, old standby word-processing, graphics, and page-layout programs. But specialized presentation software makes it much easier and may point you in directions that might not have otherwise occurred to you.

POWER PRESENTATIONS

You're confronted with an important speaking opportunity: Perhaps you've been chosen to present your department's latest project to the president of your corporation, or you have an opportunity to present your new-product ideas to a group of venture capitalists. You need to plan your talk and develop some visual aids to keep your audience interested and to make sure they remember what you said.

You can use the Mac at every step of the presentation process — before, during, and after.

Whenever you need to present ideas to a roomful of people, you need a display system that everyone can see. Basically, this means an overhead projector, a projected computer display, or a large computer monitor.

The latter options provide more visual interest and make greater use of the Mac in the presentation itself, but they may be difficult to organize and set up. Although a *VideoWorks II* presentation running on a large screen is impressive, the work involved in creating the presentation may be too great for the task at hand. And in many cases it's necessary for a presentation to be portable so it can be made to various groups in different locations at short notice. I'll get to the fancy hardware soon enough, but for the moment, consider the humble transparency.

A presentation designed to be displayed on an overhead projector is portable and easy to prepare because you can photocopy virtually any Macintosh output onto acetate and project it on the screen.

Your choice of software will depend on several factors, such as how often you'll need to update or edit your presentations and what presentation media (slides, overheads, handouts) you will use. One of the most versatile software tools available is *PowerPoint* from Microsoft. Although you can use draw and paint programs in conjunction with a word processor to get the job done, *PowerPoint* lets you do more and in a lot less time.

PowerPoint is a start-to-finish slide-preparation program. You use storyboard forms to brainstorm, then organize, your thoughts and plan out a slide show, putting ideas into the correct sequence. You can then create slides with common borders and a common theme.

You can develop a common background that incorporates your company logo or project name. You can design a border that automatically surrounds all the slides you create. With *PowerPoint*'s drawing tools, you can edit the background separately and paste in scanned images, clip art, or other graphics.

One of *PowerPoint*'s specialties is creating bullet charts. You can easily create text charts that list the significant points of an argument, with different fonts and text styles for key points. It's important not to go overboard with font styles, but the judicious application of a large typeface or special style can enhance the visual impact of a slide.

PowerPoint automatically aligns borders and page numbers for overhead transparencies. Or, if you want to use 35mm slides instead, *PowerPoint* can very quickly format each image to the correct dimensions. Microsoft has announced plans for a future release of *PowerPoint* that will interface directly via telecommunications with the nationwide network of Genigraphics slide service bureaus.

Of course, a presentation is not much good if your audience forgets what you said. With *PowerPoint* you can easily attach formatted text to each slide in your presentation to outline the substance of your speech at the beginning, reinforce significant points along the way, and summarize the presentation.

PowerPoint offers a variety of printing options. You can print multiple slides per page, giving your audience a neat, concise copy of your presentation to take home. You can also print the text attached to a slide, with each slide on a single page, so you can supply your audience with the notes you made to help you along with the narrative of the presentation.

MORE POWER TO YOU

MORE is the culprit that started this whole mess of desktop presentations, so if you want to go after someone, make it Dave and Peter Winer at Living Videotext. (I much prefer the phrase they coined — "meeting technology" — to "desktop presentations," but marketing rears its ugly head again.)

MORE is an outline processor, but the name is a hint that there's something, well, more. The more in *MORE* is graphics because the software can not only display Mac graphics along with outlined information, but it can also instantly generate bullet charts and tree charts from outlines. You can set *MORE* to cycle through a series of charts at set intervals and thus create automated slide shows. (Version 1.1c works in color on the Mac II.)

Because it is an outliner at heart, you can use *MORE* to take a presentation from the brainstorming stage through planning and creation and into public display.

Cricket Presents is from a company that already has considerable expertise in the presentation graphics arena with *Cricket Graph* and *Cricket Draw*. This program takes you from conception to finished product and lets Mac II users work in WYSIWYG color. Apple sees *Cricket Presents* as an important product, and it got considerable coverage at the Seybold Desktop Publishing Conference last September (although it was not yet shipping at the time this article was written).

You can get an optional device driver that lets you transmit screens to an Autographix service bureau for output to any of several devices, including laser, thermal, and inkjet printers, film recorders, and slide makers.

HyperCard needs little description here. Its merits and failings have been dissected and splattered throughout every Mac publication for several months now. I mention it here because *HyperCard* is one of only two or three products that can take presentations in entirely new directions.

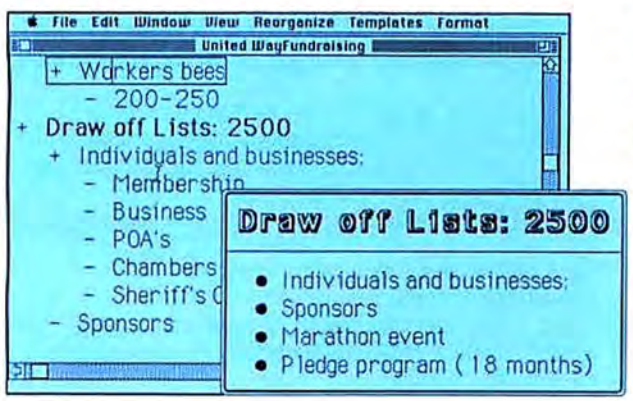
HyperCard's ability to act as a front end to external audio and video systems — such as CD, CD-ROM, videodisc, and videotape — makes it possible to design simple Mac applications, then use the Mac to run complex, interactive audiovisual presentations. So much work is being done in this area right now that you could see an explosion of *HyperCard*-based, interactive video systems in the near future.

VideoWorks II is an animation graphics and sound program. Often used to animate presentations for Macintosh shows, it isn't often thought of as a business presentation tool, but it should be. *VideoWorks II* makes it easy to build animated short "movies" with clip art or original artwork and back them up with digitized sound. With a Mac II, *VideoWorks II* creates glorious color "movies" that you can display on a large-screen color monitor. With *VideoWorks II*, you can make an animated short film as a sales tool, audience warm-up, or attention-getter for a fraction of the cost and with much less expertise than would otherwise be possible.

Shortly before this article went to press, an exciting new presentation tool was shown at the Macworld Expo in San Francisco. The product? A *HyperCard* driver for *VideoWorks II*.

MacroMind announced the product quietly, and most of the visitors to the company's booth missed the demo because they were caught up watching *VideoWorks II* in color on a giant-screen monitor. Still, a few observers were aware that this small announcement could have a huge impact on desktop presentations.

VideoWorks II is already a great tool for animated presentations. But



MORE **takes information that you create in outline form and instantly generates bullet charts like the one shown (inset). You can print the bullet charts and turn them into slides or automate them to run a slide show on the Mac.**



It's difficult to show animation in a single screen shot. This "movie" from the *VideoWorks II* samples disk shows the Chicago skyline dropping from the sky, several boats passing on the lakefront below, and aspects of the city's culture across the tops of the buildings.

the new driver means that you can incorporate *VideoWorks II* animations into *HyperCard* stacks. The combination could provide an incredibly powerful, yet easy-to-use, environment for animated presentations. Keep your eyes open for this one.

SLIDING HOME

For truly stunning output, a variety of graphics-output hardware is available. It ain't cheap, but if you do a lot of presentations, it can really pay off. Desktop slide production also gives you more control over the final result — not to mention the ability to fuss around personally with those last-minute changes we all like to make.

ImageMaker is a high-resolution (8000 lines) 35mm film recorder that generates color slides directly from a Macintosh. The *MacDriver* software supports most Mac programs, including the key presentation packages *MORE* and *PowerPoint*, and it is expected to support *Cricket Presents*. ImageMaker can show up to 6 background colors and 16 foreground colors.

Although expensive and somewhat limited in terms of font, graphic, and color support, in the long run ImageMaker can save money over the cost of using a service bureau to prepare slides. It's also considerably less expensive than dedicated slide-making systems now in use in some large businesses.

SlideWriter is a higher-end film recorder with more features and a higher price tag. Like ImageMaker, SlideWriter records Mac screens directly onto 35mm slide film, but it can do so with up to 256 colors per image. It can also handle 3-D and scanned images. Unlike ImageMaker, which can handle only PICT format images, SlideWriter can also shoot Paint graphics.

Hewlett-Packard's ColorPro is a compact, desktop, eight-pen plotter that creates gorgeous color reproductions of graphs, charts, designs, and so on, either on a special glossy paper or directly on transparency sheets. Fonts are not supported: the plotter has a single built-in font for text on slides or charts. The only other drawback is that electronically it bears little resemblance to either an ImageWriter or a LaserWriter and so it requires driver software, which is not supplied with the machine.

Most CAD/CAM and similar graphics programs have drivers built-in because plotters are widely used in these areas, but Mac business software generally does not come with a

Command Performance

A presentation can capture an audience by itself if it's creative, well planned, and makes innovative use of the tools available. It can also die an untimely death if it looks too much like every presentation you've ever seen. Even the best presentation hardware and software can't save a fundamentally boring or unorganized presentation.

There are some basic principles to follow in any presentation:

- Know your audience and design the presentation accordingly.
- Don't let the presentation take itself too seriously. Use humor when appropriate (see item directly above this one).
- Plan the presentation with a clear objective in mind, and stick close to the objective throughout. Detours waste time and send people into slumber. Don't let a captive audience feel captive. The show must go on, but don't let it go on and on and on. . .
- Keep each slide, overhead, chart, or screen simple so the point it's trying to make doesn't get muddled.
- Make sure the slides follow an ordered sequence that leads the audience from introduction to conclusion in logical steps.
- Follow the fundamental rule of TEWYGTE, TE, and TEWYTE: Tell 'Em What You're Gonna Tell 'Em, Tell 'Em, and Tell 'Em What You Told 'Em. Start out by stating the goals of the presentation and what you want the audience to come away with. Then elaborate on each point. Be sure to cover the who, what, why, when, where, and how for each point, as appropriate. Finally, sum up with an outline of what action you want your audience to take. If you don't know what you want your audience to do, they won't either.
- Make effective use of color, graphics, and text formatting on slides, but don't let your color distract or nauseate your audience; let the design of a presentation be as meaningful as the content.
- Consider timing carefully. Keep the length of the overall presentation under control. Make sure that each slide or frame or scene is displayed long enough to be read and understood, but not so long that the quicker-minded in the audience doze off while waiting for the next one.
- During the presentation, don't be afraid to pause if you need a moment to collect your thoughts.
- If you have the expertise available, use a multimedia approach.
- Be bold with visuals and display techniques.
- Rehearse your presentation. Out loud. Preferably in front of a critical (but friendly) audience. Listen to their feedback and critique yourself. Fix the weak spots. Repeat as necessary.
- A "hook" — a promise of something intriguing to come later on — can keep an audience on the edge of their seats. A line such as "Later on, I'll explain how this can increase productivity by 50%" will pique their interest. (Hitchcock recognized that telling an audience a bomb would go off in two hours made a much more interesting movie than having the bomb go off right off the bat.) Set up the joke and hold the punchline for later on. Or tell 'em the punchline, and promise to tell the joke later on.
- Anticipate questions. Answer them in the presentation or have a good response ready.
- Try to control any space-filling phrases you use as a crutch (such as "Um," "Well, I mean," or "You know") or any nervous gestures you use too much. Audiences like to play "count the 'You knows.' "
- Do use body language and dramatic gestures where appropriate, but don't force them. If it doesn't feel natural, it won't look natural.
- Involve the Macintosh in every step of the process, including the final display, if possible. Not only is it an extremely effective tool, but also its feelings get hurt if you use it to do all the homework but then it misses the party.

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plotter driver. Driver software is available from third parties, though, and it is usually easy to install in almost any Mac application.

OVER THEIR HEADS

Instead of using an overhead projector to display transparencies that were once Mac screens, why not just use the overhead projector to display the screen itself? You can't exactly mount a Mac to the display table of an overhead projector and expect to get anything but a melted Mac, but you can connect your Mac to a liquid-crystal-display (LCD) projection screen.

These units are small — about 12 inches square and an inch or so deep. They act as external monitors for the Mac, with signals sent through a video-interface card of some kind. The LCD screen sits on the overhead-projector table and displays the actual workings of the Mac screen in crisp, clear detail on a large screen, as if it were showing a transparency. The LCD display changes in real time with the Mac screen — although LCDs can't refresh quite as quickly as the Mac screen, so animation can be a little blurry.

Seen on the Macintosh for the first time at the Macworld Expo last August, several of these units are now available. They're expensive (starting at about $1500) but what a great idea! They help overcome one of the serious problems of using a Mac as a display system with large audiences.

The Flat-Screen Overhead from ASK LCD has the lowest price with the trade-off in resolution. The Flat-Screen Overhead displays 640 X 200 pixels. The Stretch-A-Sketch LCD Presentation Tool from Network Specialties (distributed by authorized Apple dealers) and the MacViewFrame from nVIEW are similar, but they offer 640 X 400-pixel displays.

The PCV 6448C from In Focus Systems is a 640 X 480-pixel-resolution display system. Its bigger brother — the PCV 6448C+2 Ultimate Presentation System — adds 1 megabyte of on-board RAM to store up to 75 screens, and it has an infrared remote-control unit that lets you cycle through a presentation without sitting at a keyboard.

Kodak's Datashow HR projection pad should be shipping by the time you read this. It has a 512 X 342-pixel display and a high-contrast, black-and-white display. (The liquid crystals in most other units are blue, yellow, or green rather than true black-and-white.) A built-in fan lets the unit sit on a projector all day without any image degradation caused by heat.

LET'S PUT ON A SHOW

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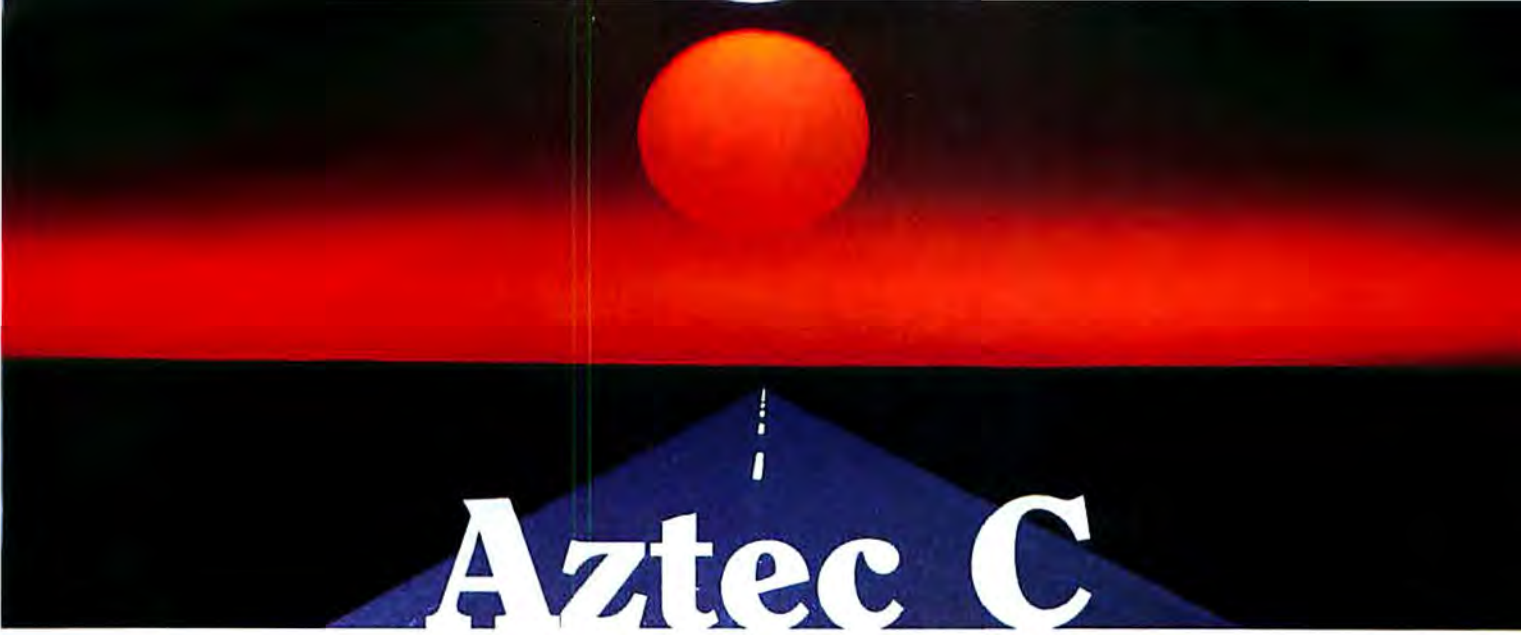
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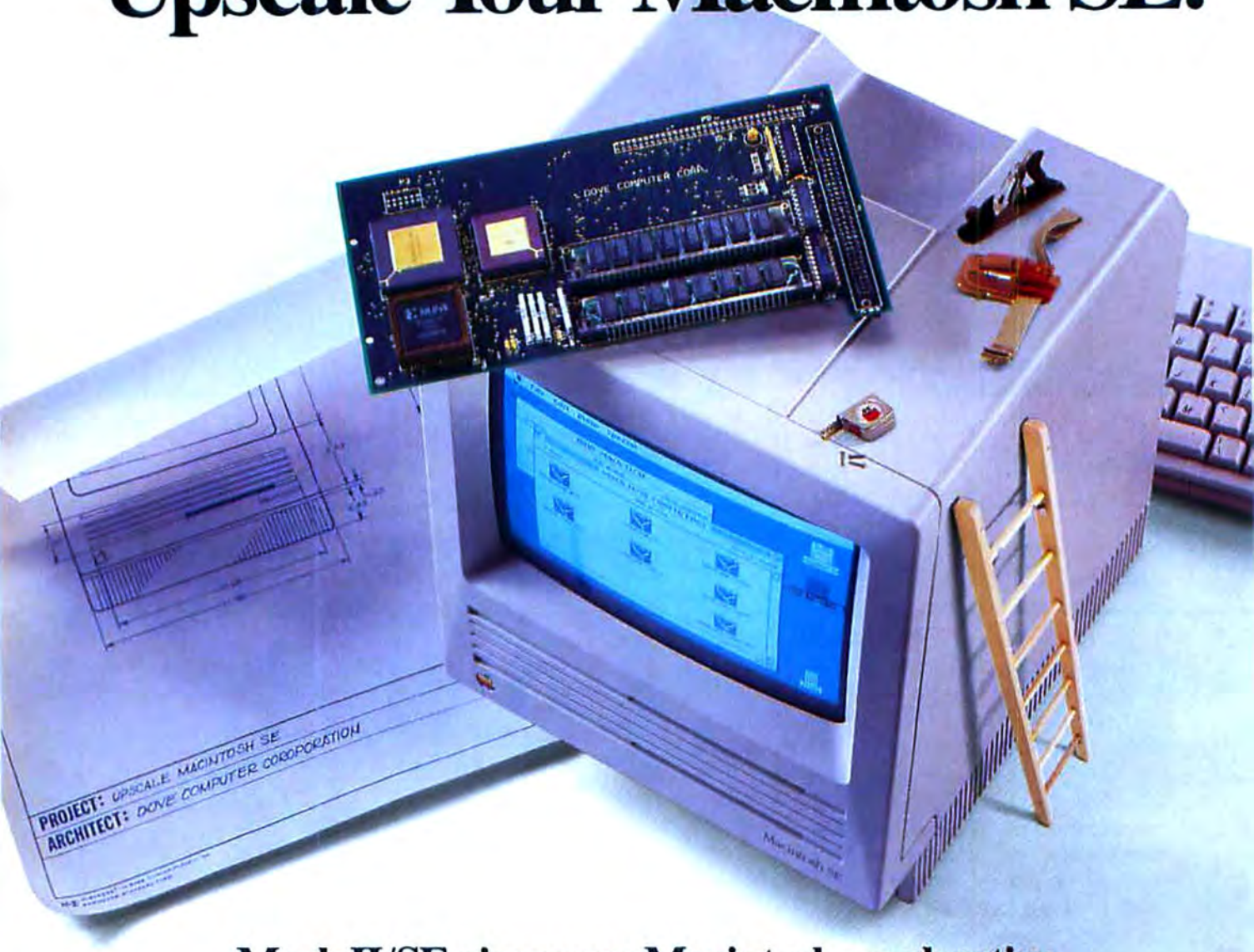
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And Now Presenting...

And last, but never least, more users will discover the joys — and the pitfalls, from which spring new products — of using the Macintosh as the best supporting actor in a desktop presentation.

chures, menus, leaflets, and church bulletins.

It was like a Mickey Rooney and Judy Garland movie, the two of them rousing the neighborhood with the cry, "Hey, gang, let's desktop publish!"

It didn't take long for the technology to mature and for corporate information departments to catch on. Desktop presentations are just beginning, so those few people who have shown a real interest are still focusing on the basics — simple slide shows and transparencies.

Three things will push desktop presentations into maturity. First, more technology — such as color, video, and digitized sound — will create new presentation options. Second, the market will spawn innovative start-up companies — such as systems integrators, software publishers, and storefront service bureaus — that will evangelize the technology.

And last, but never least, more users will discover the joys — and the pitfalls, from which spring new products — of using the Macintosh as the best supporting actor in a desktop presentation.

MICHAEL WESLEY IS A CONTRIBUTING EDITOR FOR MACUSER AND OPERATES THE WIZARD'S WORKSHOP, A MAC-BASED PRIVATE SCHOOL FOR GIFTED CHILDREN, IN SONOMA, CA.

For More Information

SOFTWARE

Cricket Presents: $495. Cricket Software, 30 Valley Stream Parkway, Malvern, PA 19355; (215) 251-9890.

HyperCard: free with all new Macs or $49.95 to registered owners. Apple Computer, 20525 Mariani Avenue, Cupertino, CA 94044; (408) 996-1010.

MORE: $295. Living Videotext, 117 Easy Street, Mountain View, CA 94043; (415) 964-6300.

VideoWorks II: $195. Distributed by Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101; (415) 492-3200.

HARDWARE

ColorPro Plotter: $1295; **Graphic Enhancement Cartridge:** $150. Hewlett-Packard, 16399 W. Bernardo Drive, San Diego, CA 92127-1899; (800) 538-8787, in CA (408) 738-4133.

Datashow HR Projection Pad: $1495; **video adapter:** $99. Eastman Kodak, Dept. 412-L, 343 State Street, Rochester, NY 14650; (800) 445-6325, ext. 883.

Flat-Screen Overhead: $1490. ASK LCD, 5 Dunwoody Park, Suite 116, Atlanta, GA 30338; (800) 255-1379.

ImageMaker: $4995. ***MacDriver*** **software and cables:** $149. Presentation Technologies, 743 N. Pastoria Avenue, Sunnyvale, CA 94086; (800) 345-7050, in CA (408) 749-1959.

MacViewFrame: $1695. nVIEW, 11835 Canon Blvd., Suite B-107, Newport News, VA 23606; (804) 873-1354.

PCV 6448C: $1895. **PCV 6448C + 2 UPS:** $2495. **Mac Plus, SE, or II adapter:** $119. In Focus Systems, 7649 Southwest Mohawk Street, Tualatin, OR 97062; (800) 327-7231 or (503) 692-4968.

SlideWriter: $11,795. Matrix Instruments, 1 Ramland Road, Orangeburg, NY 10962; (914) 365-0190.

Stretch-A-Sketch LCD Presentation Tool: $1799. Network Specialties, 1485 Bayshore Blvd., San Francisco, CA 94124; (415) 467-8411. Or authorized Apple dealers.

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– David Sachs, MacWEEK, January 5, 1988.

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Big Macro Attack

WorksPlus Command feeds new macros into an old program. See if it works for you.

BY EZRA SHAPIRO

WORKSPLUS COMMAND, THE SECOND add-in program for *Microsoft Works* from Lundeen & Associates, firmly establishes Tim Lundeen as a premier software dentist. If his first package, *WorksPlus Spell* (an excellent spelling checker and winner of a 1987 *MacUser* Eddy Award), filled some nasty cavities and gave *Works* a brighter smile, this one provides *Works* with a full set of dentures.

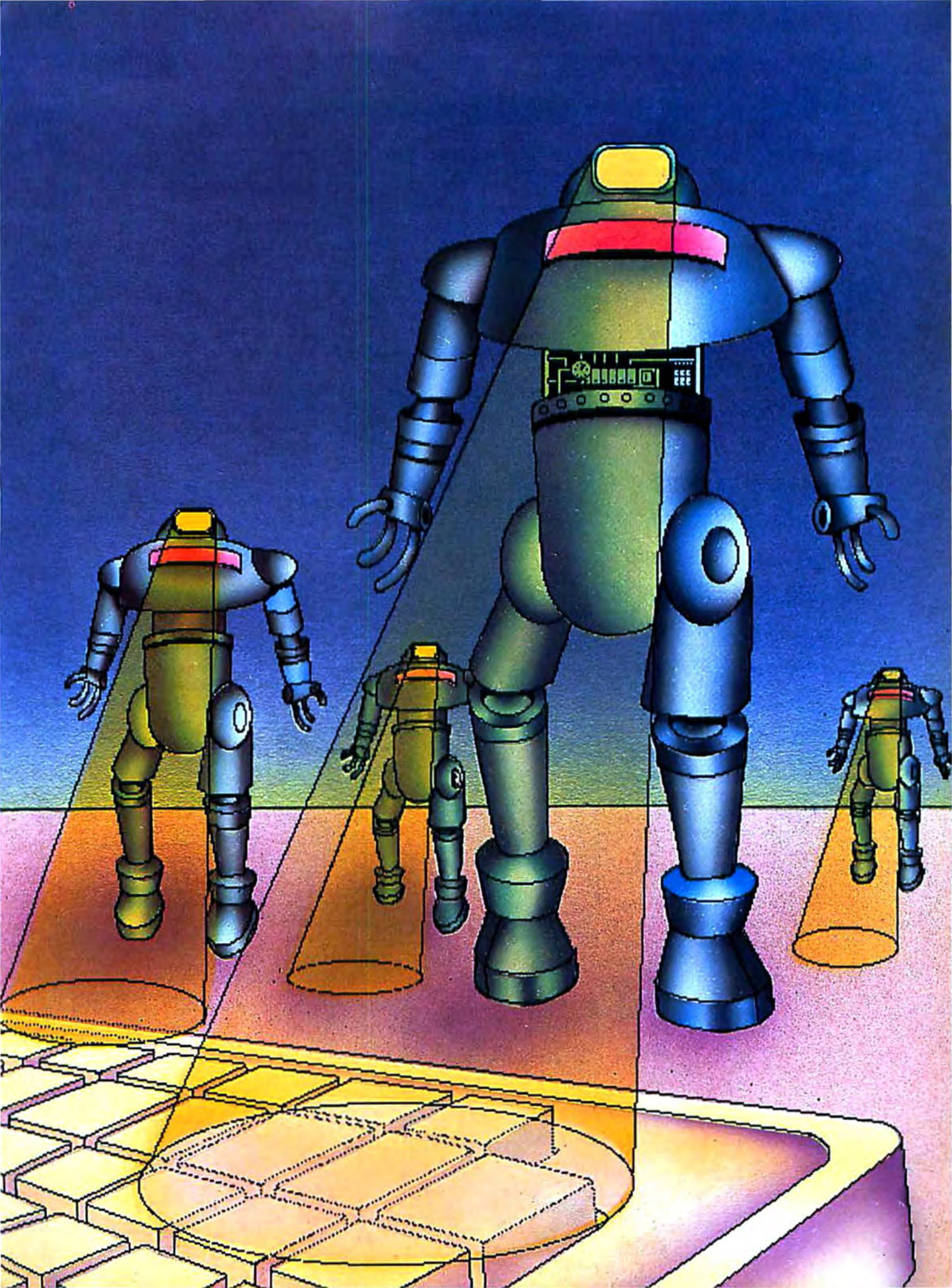
WorksPlus Command is a sophisticated macro program that adds a rich selection of features to *Works'* limited capabilities for integration, and it will delight the most demanding power user as well as the person who merely wants to get a little more oomph from *Works'* four applications.

WorksPlus Command offers three levels of assistance for the frustrated *Works* aficionado. First, it acts as a simple macro recording and playback program, so you can construct your own commands from any sequence of keyboard entries, mouse actions, or menu choices. Since *WorksPlus Command* is available wherever you are in *Works,* you can use it to automate complex or repetitive tasks that involve any or all of *Works'* individual modules.

Second, the package comes with a large assortment of macros that are ready to run. You can build tables of contents and indexes; define word processing style sheets; turn the word processor, spreadsheet, or database into an automatic phone dialer; iterate a spreadsheet; perform a search-and-replace operation in the spreadsheet or database module; perform case conversions; and so on.

Third, *WorksPlus Command* contains a full macro programming language, so you can code your own commands or edit prerecorded ones. *WorksPlus Command* knows all about selecting document windows, parsing text to extract attribute information, displaying custom dialog boxes on the screen, assigning variables and one-dimensional arrays, and using if/then/else branching

DIDIER CREMIEUX



and similar control structures. If you have any experience at all with either Pascal or C, *WorksPlus Command* will be familiar and comfortable. Even if you don't have a programming background, the logic behind *WorksPlus Command* is clean enough that you should be able to master the rudiments in a few exploratory sessions.

Even if you don't have a programming background, the logic behind WorksPlus Command is clean enough that you should be able to master the rudiments in a few exploratory sessions.

GIVE ME THE WORKS

Like *WorksPlus Spell*, *WorksPlus Command* blends itself seamlessly into *Works*. After running through a straightforward installation routine, you'll discover that *Works*' Window menu has grown three new commands: RUN MACRO, RECORD MACRO, and SHOW MACROS.

Macros themselves are associated with specific documents (like *Excel* macros). When you load a file for which you've created macros, the macros become available for you to use on that document (or on any other file that's open at the moment — if you've clicked a box in the macro's original document, that gives it "global" status).

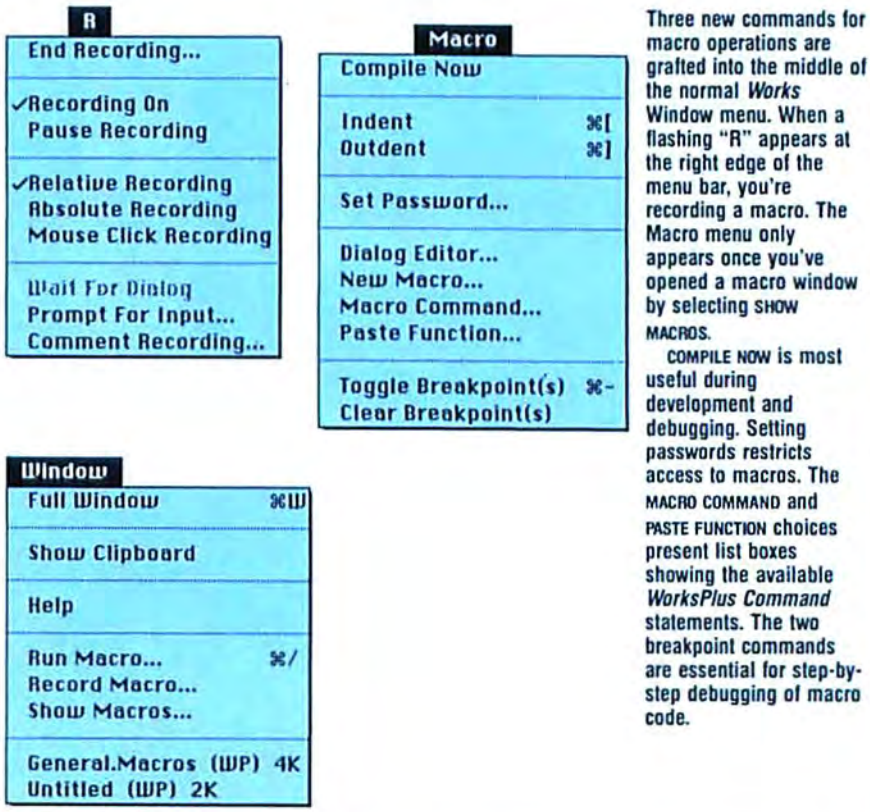
The RUN command opens a dialog box that allows you to choose a macro by name (you can avoid this step by assigning Command keys when you write macros). When you select a macro, *WorksPlus Command* shows you some status information: name of the macro, source document, and any Command key equivalent. Click radio buttons to either CANCEL or RUN, and you're in business.

If you choose the RECORD command, *WorksPlus Command* begins keeping track of what you're doing, and a flashing "R" appears at the right side of the menu bar. You can just continue to work away merrily, or you can interrupt the process to insert a pause, prompt for user input with a dialog box that the program builds for you, or declare mouse or cursor actions as either relative or absolute. (The concept is the same as relative and absolute cell references in a spreadsheet.) When you're done recording, give your creation a name (and a keyboard short cut if you want), and you've got a new command that appears on the Run list.

The SHOW command displays a list of the macros attached to the document window that's currently selected. Use this command if you want to edit existing code or start writing from scratch. *WorksPlus Command* opens a window for you and adds a macro menu to the menu bar. The menu allows you to code a macro, paste functions, build dialog boxes, insert and toggle breakpoints, and even set passwords so only the initiated can use the command.

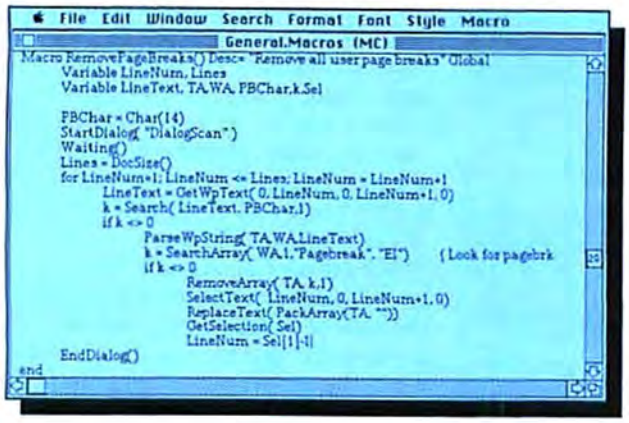
BEHIND THE SCENES

For the technically minded, here's what *WorksPlus Command* is actually doing. When you first install the program, it checks to see whether you're using *Works* 1.0 or 1.1 — it runs with either version — and modifies itself to display the *Microsoft Works* icon instead of its own. Thereafter, when you click the Command icon, it loads itself into memory as a layer between *Works* and the Macintosh operating system, trapping both input and output. The user is unaware of this process, of course; the only signs of *WorksPlus Command*'s presence are the new menu entries and the fact that *Microsoft Works* documents now show up in the *Finder* as *Command* documents. *WorksPlus Command* does not physically modify the original *Microsoft Works* program; in fact, clicking on *Works* brings it up without loading *WorksPlus Command*. As long as *WorksPlus Command* is installed,

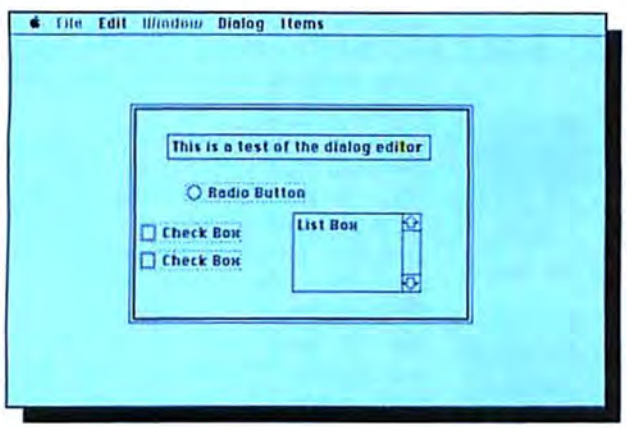


Three new commands for macro operations are grafted into the middle of the normal *Works* Window menu. When a flashing "R" appears at the right edge of the menu bar, you're recording a macro. The Macro menu only appears once you've opened a macro window by selecting SHOW MACROS.

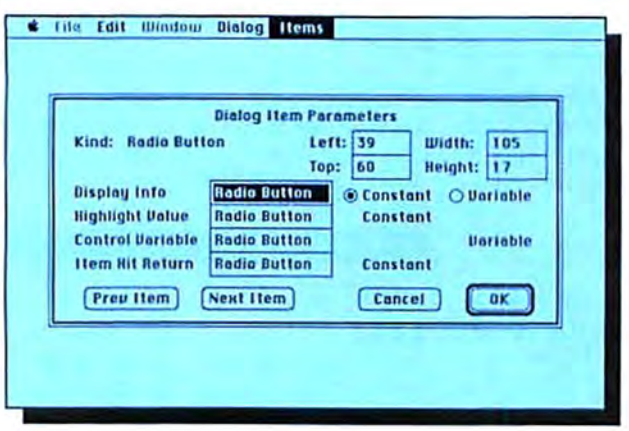
COMPILE NOW is most useful during development and debugging. Setting passwords restricts access to macros. The MACRO COMMAND and PASTE FUNCTION choices present list boxes showing the available *WorksPlus Command* statements. The two breakpoint commands are essential for step-by-step debugging of macro code.



A short macro to remove all user-specified page breaks. The program displays a message built with *WorksPlus Command*'s dialog editor that reads "Scanning document," then moves through the text, parsing a line at a time looking for the page-break character. If it finds the character, the macro selects and replaces it with a null string (""), then moves on to the next line, repeating the process.



Building dialogs with *WorksPlus Command* is simplified with the Dialog Editor, an amazing little toolkit. Boxes, buttons, and text are created by selecting menu items; every element can be moved, expanded, or reduced using the mouse. No programming is required. Dialog boxes are associated with specific documents (as are macros); dialogs are merely called by name from your programs.



Every object created with the Dialog Editor has a set of attributes, displayed in this parameter box. You can change the text displayed, determine the default status (whether a box is checked or not, which button is executed when you hit the Return key), and so on. Once you've drawn the box itself, the Prev Item and Next Item buttons let you easily flip through your dialog items.

however, opening a document created with the program will bring up the *Command/Works* combo.

When you start creating a macro, whether by recording or by writing code, *WorksPlus Command* adds a resource fork to your document; normal *Works* documents have only data forks. The resources in the new fork contain your macros. The addition of the resource fork is transparent to *Works;* should your document be transferred to someone with a copy of *Works* but not *WorksPlus Command*, there will be no trouble loading it.

If you write or edit a macro, using the SHOW MACROS menu item, *WorksPlus Command* opens a word-processing window with the file type "MC" (as opposed to a text window, which has a "WP" identifier). While you enter the code, all word-processing functions are available. Closing this macro window drops you back to the original document.

WorksPlus Command automatically reduces any text macro to a compiled form when its document is loaded or as soon as you notify the program that a new macro is finished; this makes for faster execution. Again, you needn't worry about this step. Compilation merely chews up a little time at inconspicuous moments.

COMMAND PERFORMANCE

The macro recording mode is as easy to use as similar implementations in other products; expect no problems here. I found I did have to be careful with choosing between relative and absolute positions, but that was no surprise. Editing macros is a breeze if you're making minor changes; major redesign requires serious programming, however.

The collection of macros included with the product is excellent. Even if you never record or write a macro yourself, this assortment is well worth *WorksPlus Command*'s $99.95 price. About the only thing I missed here was a dummy script or two for automating telecommunications log-ons — a critical feature missing from *Works* itself. However, recording such a macro proved to be no big deal.

I have a bit more trouble endorsing the programming aspects of the package, though I don't mind the language itself. Programming is programming, and one should expect a little brain-bending. However, for reasons that are technically beyond me, macros must be indented to run successfully, and indentation requires the use of the Command-[key for an indent and the Command-] key for a hanging indent. This is the reverse of accepted proofreading symbols, so there's always an uncomfortable moment of hesitation for me. I also find myself instinctively using the Tab key, which is a no-no. This system means you can't move text in from a word processor or the Clipboard (unless you're transporting from one macro document to another). I can't really see why anyone would want to use an outside editor to create a macro, but should you want to, you can't.

Documentation is tight and dry.

Macros for Works: A Select Menu

WorksPlus Command comes with several macros that will increase your productivity with *Works*. Here's a sampling of the macros that come with *WPC*.

Macro	Function
DialPhone	Dials a number (selected text in word processor, or selected cell in database or spreadsheet).
FillDown	Fills down in a database.
FreezeMergeDoc	Freezes a copy of a word-processor MERGE from a database document.
IndexEntry	Makes an index entry reference for the selection.
InfoOnSelection	Displays information about a database or spreadsheet selection.
Iterate	Iterates a spreadsheet to solve circular references.
RemovePageBreaks	Removes all user page breaks in the current word-processing document.
RenameMergeDB	Renames the database used for the word-processor's MERGEFIELD entries in the selected text.
ResizePicture	Resizes the selected picture per your input.
SaveAllDocs	Saves all existing documents to disk (doesn't save Untitled).
SearchAndReplace	Search and/or Replace for a database or spreadsheet document.
ShowMarkers	Shows all word-processor markers in the selected text.
HideMarkers	Hides all word-processor markers in the selected text.
DeleteMarkers	Deletes all word-processor markers in the selected text.
UpperCase	Converts selected text to all uppercase.
LowerCase	Converts selected text to all lowercase.
MixedCase	Converts selected text to leading capitals.
BoldToItalic	Converts selected text from bold to italic.
HeadingEntry	Makes a new section heading or converts to a new heading style.
ResetHeadings	Reformats all headings to match new header templates.
MakeIndex	Makes an index from marked entries.
MakeTableOfContents	Makes a Table of Contents.
MultiColumnMerge	Generates multicolumn database labels from a word-processor's PREPARE TO MERGE document.
AddStyle	Adds (defines) a new style rule.
ResetStyles	Resets all style rules after editing style templates.
SelectStyle	Selects a style rule for a new section.

Explanations of the recording mode and the provided macros are clear and concise, but the programming section is really more of a reference than a full-blown tutorial. Newcomers to programming are likely to be baffled by syntax and conventions; it's all there, but it ain't gentle. I'm not sure I can honestly demand a thick training manual from a program that costs under a hundred bucks; I have to hope that *WorksPlus Command* sells well enough for someone else to write the equivalent of Danny Goodman's *HyperCard* tome.

The program works beautifully with *WorksPlus Spell*. In fact, you can throw away the *WorksPlus Spell* support files because *WorksPlus Command* has the necessary code built in. All you have to do is run a small program provided with *WorksPlus Command* to enable the spelling menus.

Note that using *WorksPlus Command* pushes *Works* far beyond the 512K limit; you really need a megabyte of RAM to run it. And if you've only got a megabyte, say farewell to *Switcher* and *MultiFinder*.

REACTIONS

I find myself at a loss on how to evaluate *WorksPlus Command*. It's strongest if you reassess *Works* itself as a program in light of *WorksPlus Command* as an addition.

This package is certainly impressive enough to pull *Works* from its berth as a novice-level package into the heady realm of power tools, but *WorksPlus Command* suffers because of *Works'* inherent weaknesses and the difficulties of being an add-in rather than an integral part of the package. *WorksPlus Command*'s performance is excellent, though it's dragged into the mire by the slowness of *Works* on elementary operations such as scrolling, sorting, and file import. You can define style sheets for your text documents, but you still can't use logical fields in your databases — *Works* doesn't have them. Likewise, you can construct complex iterative macros for your spreadsheets, but you're not going to speed up *Works'* recalc time — you're stuck with the speed deficiencies of the basic program.

WorksPlus Command lacks an internal help system, which cripples the ease of coding a new macro, but implementing one would have both made the program top-heavy and set up a natural confusion with *Works'* own help system. And I'm sure my hassles with program editing could have been avoided if *Command* had been designed into *Works* from the start.

On the whole, I still have to recommend that you purchase a full-featured standalone package for any application of which you're a heavy-duty user. However, the addition of *WorksPlus Spell* and *WorksPlus Command* to the picture means that you can push *Works* much further than Microsoft seems to intend. For many people, a Lundeen-enhanced copy of *Works* becomes an admirable substitute for Microsoft's big programs.

EZRA SHAPIRO IS A CONTRIBUTING EDITOR FOR MACUSER. HE IS ALSO EDITOR AND PUBLISHER OF A NEWSLETTER CALLED TECHNOLOGY & ADVERTISING.

MACUSER RATING

WorksPlus Command

★★★★

Follows Mac Interface	■ ■ ■ ■ □
Printed Documentation	■ ■ □ □ □
On-Screen Help	None
Performance	■ ■ ■ ■ ■
Support	■ ■ ■ ■ ■
Consumer Value	■ ■ ■ ■ ■

Comments: Allows you to build and use predefined macros in *Works*. **Best Feature:** Provides tighter integration of all *Works* modules. **Worst Feature:** The language itself is difficult, and the documentation doesn't make it any easier for the novice *Works* user. **List Price:** $99.95. Published by Lundeen & Associates, PO Box 30038, Oakland, CA 94604. (415) 893-7587. (800) 233-6851. In CA, call (800) 922-7587. Requires 1M+. Version 1.1a reviewed. Not copy protected.



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Yes? But do you have what it takes to lift off in a hot new $20-million fighter and fly low and fast into enemy territory? Can you navigate quickly enough to avoid a barrage of accurate surface-to-air missiles without losing control of your plane and crashing? Can you drop your bombs on the enemy runway and your air-to-ground missiles on the enemy HQ? Can you maneuver your Falcon F-16 quickly enough to get onto the MIG-21's tail, his "six," and stay there long enough to shoot him down? And, when all is said and done, can you coax your frisky (and possibly damaged) plane down safely onto your home runway?

Do you, in short, have enough of the right stuff to make the grade?

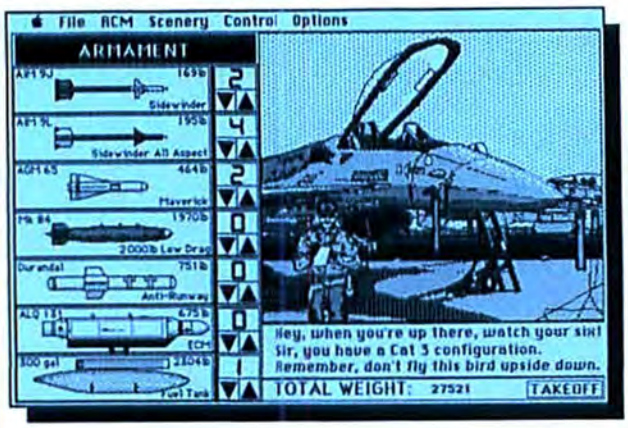
One way to find out is to enlist for a four-year tour at your nearest Air Force or Navy recruiting station. Another is to beg, buy, or borrow (don't you dare copy!) *Falcon,* the new combat flight simulator of General

BY JAY PALMER

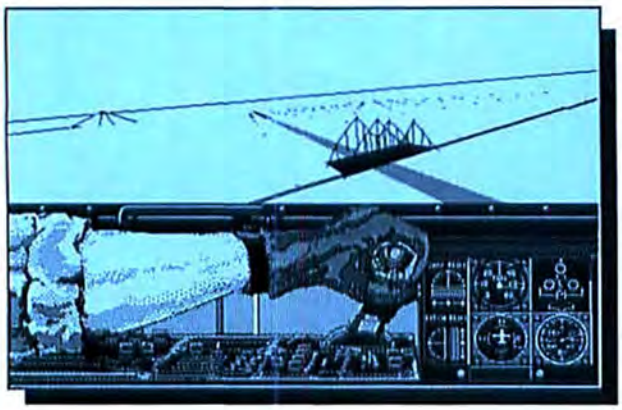
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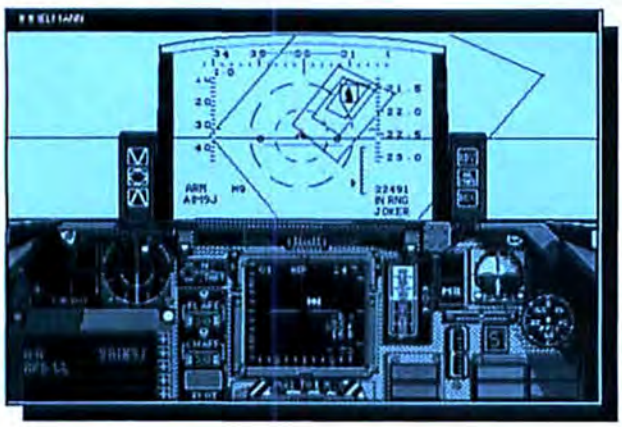
Fight or Flight



The "Sarge" will help you arm your bird with combinations of weapons and supplies. At First Lieutenant level, you can carry unlimited weight. At higher ranks, you must choose according to the mission. Sometimes the Sarge will have what you want, but often he will be out of stock. Whatever, watch your total weight and listen to the man; he gives good advice.



The view from the left side of the cockpit as you approach an enemy bridge. Note the yaw and pitch indicators showing the plane in level trim, fuel gauge indicating over 60 pounds, a compass heading south-of-east, a backup airspeed gauge showing about 300 knots, and the landing gear indicator (no lights confirm wheels up). Program upgrades also show a backup altimeter.



The ACM (Air Combat Maneuvers) menu lets you select a whole range of different maneuvers for the enemy MIG to perform, including breaks, loops, YoYos, and scissors. In this case, the plane is half way through an Immelmann. The square ComEd radar screen below the HUD shows the MIG to be on a heading of 26 degrees, doing 383 knotts at 24,000 feet. The signal "joker" warns that fuel is low.

There is a choice of 12 different missions of varying difficulty, some air-to-air and some air-to-ground.

Dynamic's top-of-the line F-16 "Fighting Falcon" fighter-bomber. It comes from Spectrum HoloByte, the same software company that brought the World War II submarine simulator, *GATO,* and *Orbiter,* the 1980's space shuttle simulator, to the Mac screen.

BEST OF BREED

The F-16 is an entirely different breed of animal that takes up and off where *GATO* and *Orbiter,* both now rather dated and basic simulators, leave off. Although it's not without flaws — some more serious than others — *Falcon* is a combat simulator that easily outperforms its current competition, Microsoft's *Flight Simulator,* Miles Computing's *Harrier Strike Mission 2,* and Bullseye Software's *Fokker Triplane.*

Falcon will not run on all Macs since it requires a minimum of one megabyte of RAM. It will not run with *Switcher,* and the RAM cache must be switched off. The program is not copy protected, but this is a complicated game, and would-be F-16 pilots will be lost in the clouds without the detailed and complex 140-page manual.

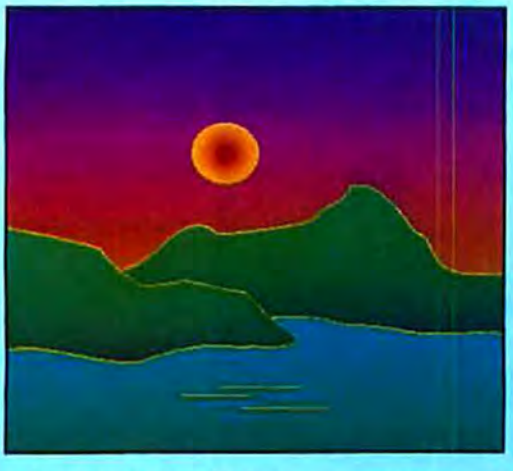
From the moment you boot the two 800K disks that constitute *Falcon,* you know you've got something special. First there's some nifty opening music and sound effects of jet combat, just to get you in the right mood. Then up pops the "Duty Roster," a screen listing ten active players with their military ranks, call signs, and total merit points. To start, click one of the "rookie" slots and choose your call sign.

That automatically brings up the "Rank & Mission" screen. First choose a rank from First Lieutenant up through Captain and Major to Colonel, bearing in mind that however nice it may be to wear those eagles on your shoulders, the higher the rank, the more difficult it is to fly the F-16 and the more accurate those enemy MIGs and SAMs become. Start out as a First Lieutenant. Then choose the maximum number of MIGs you want to fight; Mac 512s and 512Es can only handle one, Pluses and SEs can take two, and Macs with a 68020 accelerator card can cope with three. Beginners click none.

There is a choice of 12 different missions of varying difficulty, some air-to-air and some air-to-ground. The easiest mission is the "Milk Run," where the target buildings are in your own friendly territory and there are no enemy MIGs or SAMs. More difficult missions involve air-

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to-air combat against increasing numbers of MIGs or bomb and missile attacks on SAM sites, bridges, buildings, and runways.

Like *Fokker Triplane* and *Harrier* (but unlike *Flight Simulator*), all of *Falcon*'s flying is done in a small artificial world unique to this game. However, within its obvious limits, it is an extensive combat arena, mixing mountains, lakes, rivers, and fields with roads, bridges, and other man-made targets.

ARMS AND CONTROL

Your final decision concerns armament. This is important for everyone except First Lieutenants who, by virtue of their lowly rank and skills, are permitted to carry unlimited bombs, missiles, cannon shells, and stores. Higher ranks are limited by weight, drag, and the type of weapons selected.

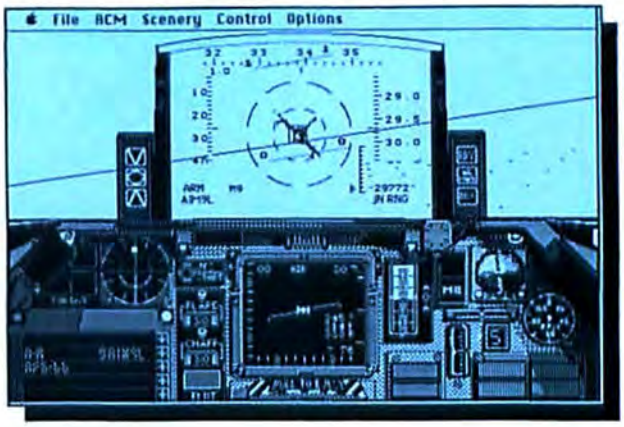
If you are simply hunting MIGs, take some of the different kinds of Sidewinder air-to-air missiles. If you are bombing bridges or buildings, try to take at least one Sidewinder for emergencies, but load up with Maverick air-to-ground missiles and several types of bombs. If you expect SAMs to be a threat, make room for an ECM (electronic counter-measures) pod. If you are after a distant target, take a spare fuel tank.

You have one friend and ally, your "Sarge" or ground crew chief. Be nice to him even if you're a Colonel and he's an enlisted man; you don't want to get into serious trouble and find he "forgot" to arm the ejection seat. More importantly, read very, very carefully what he has to say about your weapons and stores load — he will alert you if you try to take on too much or if there are maneuvers that you shouldn't attempt.

The F-16 can be flown in three different ways— using the mouse, a joystick or the keyboard — but the program was written for the keyboard, and in many respects that remains the easiest method of controlling the plane. At higher ranks and more advanced flying skills, however, Spectrum HoloByte's top F-16 aces suggest that switching to the mouse provides greater maneuverability. (This reviewer, a private pilot qualified to fly Cessna and Piper single-engine aircraft, found that it was too easy to over-control the F-16 using the mouse and that the keyboard, at least at first, was preferable.)

REALISTIC INSTRUMENTS

You'll need more than good reflexes to come through intact. The cockpit dashboard has an array of instrumentation, including an RPM gauge, altitude direction indicator, stores control panel showing what weapons you are carrying, and a 360-degree radar warning screen. The single most important instrument is



You are on the enemy's "six." The HUD shows him to be in range and in the center of the two circular cones of vulnerability. Notice that the speeds are low to improve maneuverability.

Winging It

Since there is nothing like the real thing, MacUser *sought out the observations of a real F-16 pilot for a* Falcon *reality check. When the Pentagon regretfully refused comment, we turned to General Dynamics, the maker of the Falcon. The company, amused by the unusual request, arranged for one of its senior test pilots, Bland Smith, to "test fly" the program. From our perspective, Bland was a good pick. Before joining General Dynamics, he served 13 years with the U.S. Air Force, building up time on the F-4 Phantom as well as the F-16. Though he never saw combat, he is a veteran of the USAF's elite advanced Fighter Weapons School and its demanding Red Flag air combat exercises, which pit U.S. pilots and planes against simulated Warsaw Pact ground and air targets. Nowadays, Bland earns his pay testing upgraded versions of the F-16 and demonstrating the abilities of an agile fighter at air shows.*

MacUser: *How does* Falcon *measure up to the real F-16 fighter jet?*

Smith: One thing is clear — this is a game, not a simulator. At least it's not a simulator in the sense that a real fighter pilot would use the word. The mouse is extremely inconsistent. It imparts movement to the plane's controls based on how fast you move it, not how far. When you move it a certain amount to the left, it gives one reaction. When you move it the same amount to the right, it gives another. I just could not anticipate how much the plane would move. In any case, there is no plane in the world — at least not yet — that you can fly with buttons or a mouse. It's all pretty unrealistic on that score.

MU: *Aside from the controls, is* Falcon *as powerful as an F-16?*

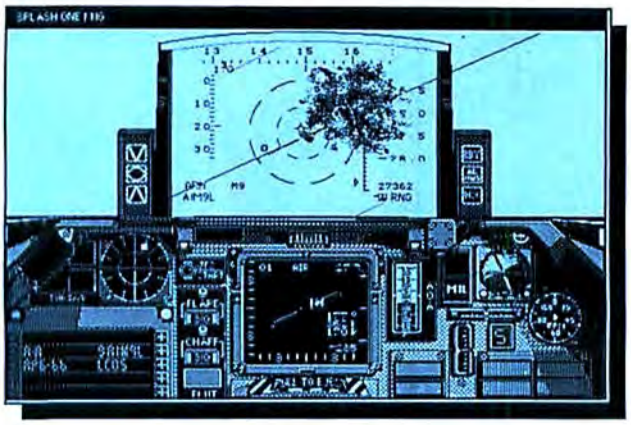
Smith: I started flying in the Super Engine mode [*Editor's Note: Super Engine is the lower skill level mode.*] and that was extremely unrealistic. Later, I got some time on the Normal Engine, which was better. I didn't sit down with a calculator and a stopwatch, but it seems a bit too optimistic in terms of performance. It is still too powerful, too fast, and there is too great of an acceleration compared to what you really get. My impression, and I stress it is only an impression, is that *Falcon* outperforms the real thing.

MU: *Does that mean* Falcon *is more difficult to fly than an actual F-16?*

Smith: The flying aerodynamics do not always match reality. If you put a real plane, any real plane, into a steep bank, you have to increase back pressure on the stick to prevent a dive. Here, if you put Falcon into a bank, it stays at the same altitude. It is correct that the Falcon, unlike light planes, uses no rudder, but changes heading by banking. The use of flaps solely as a brake is incorrect, since real planes use flaps for landing to reduce approach speed.

the square Comed (or combined map/electronics display). Pressing the "C" keys toggles between a map mode, showing the position of the plane and key targets, and radar mode. In radar mode, the Comed provides vital information about enemy MIGs, including their heading, speed, altitude, an intercept angle, and closing speed.

Taking off is a matter of turning on the engine, adding power with the "+", and releasing the wheel brakes by hitting "W." Watch the speed build up and, at around 150 to 200 knotts, rotate the stick and put the plane into a climb by pressing the 2 on a numeric keypad. (The 8 puts the plane in a dive, 4 banks it to the left, and 6 banks it to the right.) You get side and rear views from the cockpit (and glimpses of different instruments) by pushing the 3, 7, and 9 keys. If your plane maneuvers are too violent, hold down the Shift key while moving the control surfaces. All controls are duplicated on the alphabetical keyboard.



The Sidewinder locked on and hit its target.

The view to the front is the important one, showing the plane's line of flight, the gun and missile sights, and most of the key instruments and indicators. One of the very best features of *Falcon* is its HUD, or heads-up display. In modern fighters, the HUD is a specially treated piece of glass in the front of the canopy that lets the pilot see crucial information without taking his eyes off where the plane is going.

The computer version of the F-16 offers several different HUDs, all pretty true to life, and each different depending on whether the pilot is shooting missiles, dropping bombs, using his cannon in a dogfight, or coming in to land. All HUDs display airspeed, compass heading, G-force, altitude, the flight path ladder or angle of climb and dive, and the yaw velocity to left or right.

Beyond that, air-to-air HUDs show the number of missiles or cannon rounds left, the range to an enemy plane, and whether or not missiles are locked on. The ILS (instrument landing system) HUD provides a visual reference to an ideal approach-to-landing glide path.

The combat HUDs are particularly well done. As in a real Falcon, two twin circular cones of vulnerability on the HUD help the pilot make an instant decision about whether or not an enemy MIG can be hit by a missile. At the same time, the LCOS, or lead computing optical sight, indicates just where an enemy plane is heading. This is a vital aid since missiles take a few seconds to lock on and pilots need to aim at the point the enemy plane *will* be, not where it is.

Air-to-ground HUDs vary according to the type of bomb or missile, with different aiming points and range-to-target data. Using the

Trying to land the program was very difficult. The real plane is not nearly so difficult to land. This was one of the things that kind of put a blanket on the program for me. The real F-16 is very precise. I won't claim that landings are simple, but for pilots with any kind of experience, it's still a routine task. But I guess they had to build in some extra thrill.

MU: *What did you like about the program?*

Smith: The playback feature — the Black Box — was a really great point, and I especially liked studying what happened in three dimensions. The air combat maneuvering, where you could follow enemy planes performing a variety of different maneuvers, was something else I really found great.

I liked the views out of the sides and rear of the cockpit, too. The macho image of rolled-up sleeves was nice. It gives the right flavor of a fighter jock. Most pilots, of course, don't carry that image over from the bar to the cockpit, where safety is more important.

MU: *Is the display what you would actually see if you were in the cockpit of an F-16?*

Smith: The instrumentation is especially good, though some things are just not in the right place or they work in a different way or are just downright wrong. Still, they had to make the plane flyable. The only thing that really disappointed me was the HUD, especially the weapons' HUDs. They are not really true to what is actually on the real plane. Obviously, lots of compromises had to be made. The weapons' documentation, indeed the documentation of the entire handbook, is excellent. But when you come down to it, not all the weapons work as they should. In real life, the LCOS is never used for missiles, only for cannon. There is no audible lock-on for missiles, only a print read-out. The Mavericks work pretty close to the real thing, but what they call "pop up" bombing is not what we would call "pop up." They kind of mixed and matched — putting in bits of one type of weapons delivery mode with another type.

MU: *It sounds like you were disappointed in the simulation.*

Smith: All this sounds rather critical, but it shouldn't. Parts are a little bit off, but taken altogether it adds up to something that is much closer to reality than I would ever have expected. I am fascinated that they have done so much with so little. It's not fine-tuned, but there are some great points. While the computer simulation does not rank with the real thing, I found the complexity challenging — not just for the first couple of attempts but for hours. I found that there was enough variety to keep me interested. It is an extraordinary good try.

Mac to t



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Beaters" policy.) And if you're not completely satisfied with your Mac software, you can return it within two weeks for a full refund.

So stop into Egghead during Mac Month. Just call 1-800-EGGHEAD for the store nearest you.

Egghead's Mac Month

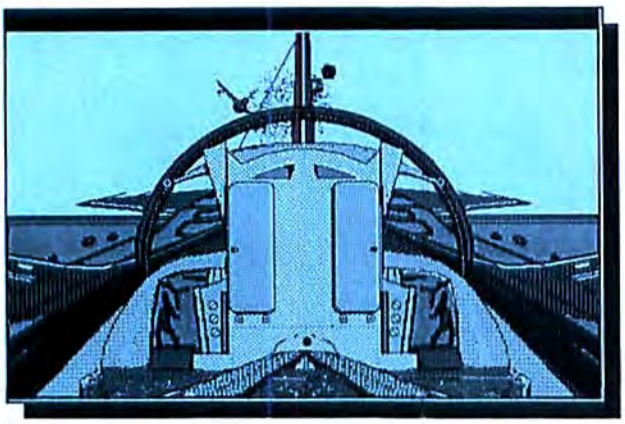
Discount EGGHEAD SOFTWARE

San Diego, San Francisco, Seattle, Tampa/St. Petersburg, Washington D.C. and Westchester/Fairfield Counties. So far.

2,000-pound bombs and the anti-runway Durandel bombs, *Falcon* permits sophisticated "pop-up" bombing runs, the same method used by NATO pilots to deliver tactical nuclear bombs and get the hell out of the area. The air-to-ground Maverick missile is even more impressive: The missile is visually locked on to its target outside normal ranges with a TV camera image displayed through the Comed screen.

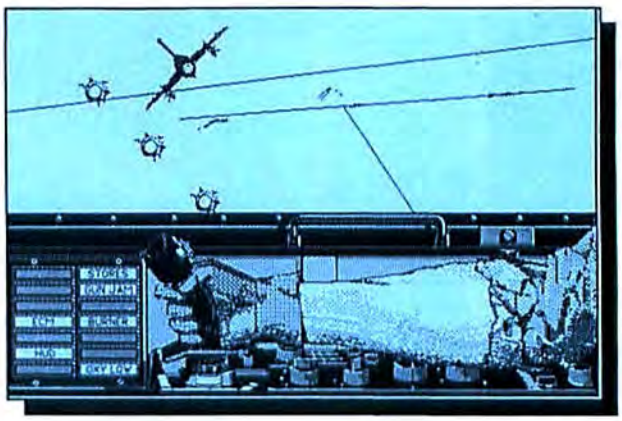
One very useful aid in combat is the so-called Black Box, the simulator's flight recorder. OPTION-B pauses the action while the Mac screen displays a three-dimensional graphlike depiction of what is happening, showing the path of the F-16 and any MIGs in the vicinity.

For quite a few hours of flying time, a new F-16 pilot may find it all too much. For those in desperate straits, two suggestions: use the "P" key to freeze the action and take time to think about your next move. The apostrophe (') key returns the plane to straight and level flight and saves you and your plane from instant computer death. In a dogfight, use the "A" key to turn on a rudimentary autopilot that will try to track the enemy plane. No matter what you do, it's a rare novice who isn't shot down regularly early on. Expect to crash many times on landing before managing to touch down successfully, too.



Whoops...another MIG has scrambled and he's on your "six." Launching flares will decoy his air-to-air missiles.

When you are at the controls of Falcon, you feel as if you're at the controls of a modern fighter-bomber rather than a computer.



Unless you are a hot-shot pilot, your days are numbered. The view from the cockpit as a MIG dives down, guns blazing. The bullet holes show that he has already scored, as do the damage warnings: your gun is jammed, your bombs can't be dropped while the HUD and ECM threat indicator are both in use. You can't use the afterburner to flee for home, and you will black out if you fly above 27,000 feet.

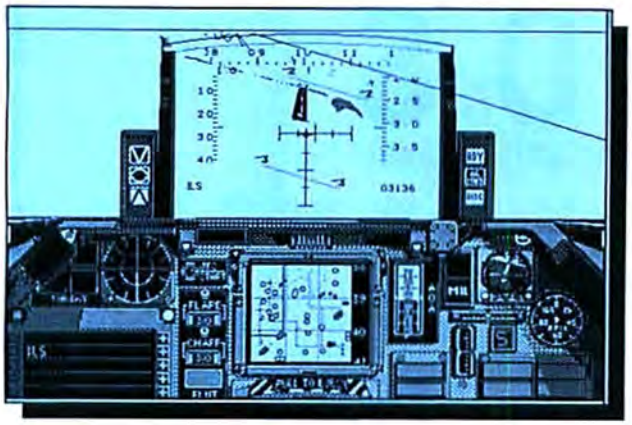
INCREASINGLY TRUE TO LIFE

At the lowest levels, the F-16 hardly performs like the real thing. But as you gain more skill and move into higher and higher ranks, the simulation becomes increasingly realistic. First Lieutenants, for example, can't crash — they simply bounce back up into the air. Their planes have "super engines" that provide instant acceleration, and they carry unlimited weapons and an endless supply of gas. Novice pilots don't black out from G-forces, no SAMs are launched, and enemy MIGs are unarmed.

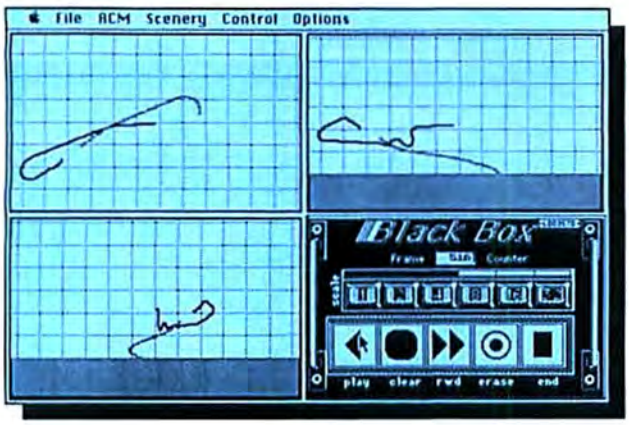
Higher ranks face a very different world. A Colonel's F-16 is the hardest to fly since the engines can stall and the plane's performance is affected by the weight and drag of the armaments and stores. Ejecting pilots can be captured or killed and can black out in tight turns. MIG flares are totally effective, and the enemy planes' missiles and guns are very accurate. Just to make matters more interesting at this level, ground SAM sites launch two different kinds of anti-plane missiles. To put it bluntly, F-16 Colonels have a short life expectancy.

The very qualities that make the computerized F-16 dangerous for flyers provide the best part of the program. When you are at the controls of *Falcon*, you feel as if you're at the controls of a modern fighter-bomber rather than a computer. When you start a bombing run, come up against a MIG, or see the threat receiver come on from a SAM launch, the adrenaline flows, and you begin to sweat. There are so many different controls and things that need to be done quickly and correctly that, unless you are a real hot shot, you come close to pilot overload, the real-life cause of many a modern jet accident.

One potentially appealing aspect of *Falcon* was introduced in a late February upgrade that came too late to be included in this review. It apparently allows two F-16 pilots to link their Macs' modem ports with an Imagewriter printer and dogfight one another. A future upgrade is planned that will permit dogfights over a 1200-baud modem.



The runway is in sight, and it is time to use the ILS (Instrument Landing System). Here, it warns that the plane is too high and too far to the right of the ideal glide path. To the left of the HUD, the bottom triangle of the angle of attack (AOA) indexer is lit, warning that the plane is coming in at too high a speed, with its nose too low.



After you are down — or, if you wish, in the middle of a dogfight — check the cockpit flight recorder (the so-called Black Box), for an instant replay of the flight paths of your F-16 (the black line) and any MIGs (grey lines). The jukebox keys toggle replays on the different panels, each of which shows a different view.

THE DOWN SIDE

For all its many topnotch features, *Falcon* has some weaknesses and flaws. Most obvious, at least to a pilot, is the fact that some of its controls, most particularly its flaps and trim, do not perform as they do in the real world. Instead of decreasing the stalling speed, *Falcon* flaps are merely an additional braking aid on landing. The trim, which should permit small adjustments in the plane's rate of climb and descent, merely swings the nose up and down and right and left without altering its heading.

At the same time, the simulator's radar, according to military pilots, does not function as it should: stall warnings come during — rather than before — a stall. Worse, the emergency combat autopilot is dangerously stupid and unreliable: In its effort to keep turning until it gets you on the enemy's tail, it can spin the plane into the ground.

The cockpit graphics are easily the best since *Fokker Triplane*, the top of the pack till now. But they're still not perfect. Unlike *Flight Simulator*, *Falcon* has no lag in updating the view, but it lacks *Flight Simulator*'s ability to factor in clouds, bad weather, and unexpected failures of key instruments.

Most irritatingly, there is no way for a pilot to program in his or her choice of flight default values. There should be, for example, a special rank, say a visiting British Squadron Leader, where a pilot can specify that his F-16 will combine features of different ranks, say a First Lieutenant's "super" engine, the limited fuel of a Captain, the blackout possibilities of a Major, and the fighting capability of a Colonel. It would also be nice if pilots at upper ranks could opt to turn off the threat of SAMs to permit them to concentrate on MIGs and ground attack.

A final weakness, the limited variety of *Falcon*'s landscape world, is one that Spectrum HoloByte intends to correct. Unlike *Flight Simulator*, *Falcon* will not fly in a projection of the real world. But Spectrum HoloByte is planning an upgrade that will introduce an additional "combat world." This will have more detail for ground objects and a whole new range of targets, including moving ships, trains, and truck convoys. F-16s will be able to fly through cities to bomb specific buildings. The enemy will fly highly maneuverable MIG-29s.

EARNED WINGS

Even with these drawbacks, the company claims the game echoes the real performance of the plane with a high degree of accuracy. The Pentagon would not comment, but a retired Air Force Colonel, a former F-16 pilot now working with real flight simulators, visited Spectrum HoloByte to research just how and where the company dug up its information. (See the sidebar.)

Until the promised improvements materialize, F-16 pilots will have to be content just blowing up bridges and shooting down MIGs. Do enough of that, stay alive, and build up a high enough score, higher than anyone has achieved to date, and there is a surprise in store: A secret message will come up on the Sierra Hotel screen asking the top ace to call the software company.

So wind up your engine, load your missiles, and set off for MIG alley. Good hunting — and watch your six!

JAY PALMER IS A FINANCIAL JOURNALIST WHO FINDS FLYING HIS MAC SAFER — AND CHEAPER — THAN THE REAL THING.

MACUSER RATING

Falcon ★★★★½

Follows Mac Interface	■ ■ ■ ■ ■
Printed Documentation	■ ■ ■ ■ ■
On-Screen Help	None
Performance	■ ■ ■ ■ □
Support	■ ■ ■ ■ □
Consumer Value	■ ■ ■ ■ ■

Comments: A few flaws but the best flight simulator now available. **Best Feature:** Gut-tightening, sweat-making realism when dogfighting MIGs, dodging SAMs, and bombing targets. **Worst Feature:** A small program world with a limited — and ultimately boring — number of different targets. **List Price:** $49.95. Published by Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501. (415) 522-1164. Requires one megabyte of memory. Not copy protected.

FLASH CARDS

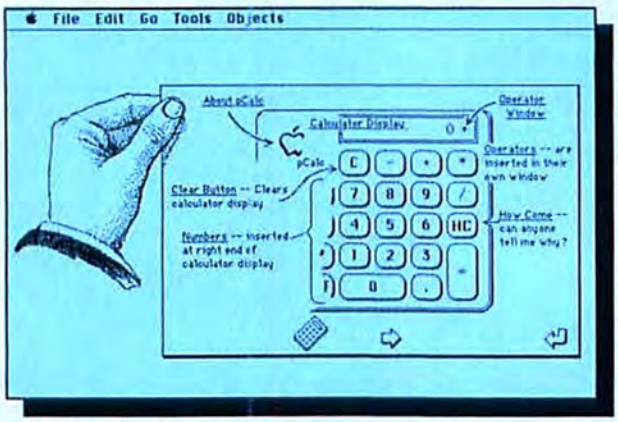
EDITED BY LAURA JOHNSON AND VICTORIA JUAREZ

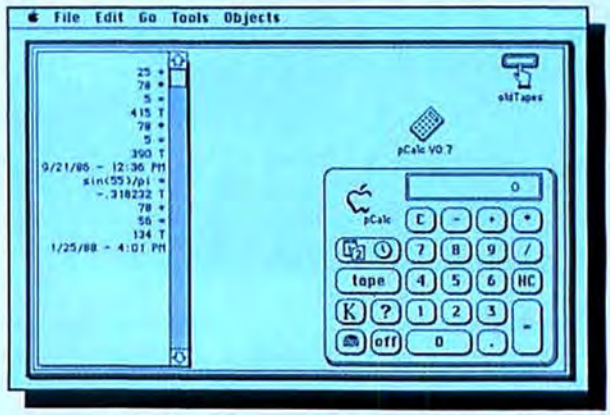
Has anybody figured out what *HyperCard* is yet? An application? System software? A universal data standard that lets you store text, data, graphics, sound, and even logical structures in a common format that can be shared by diverse applications? An intuitive programming tool that does to programming languages what calculators did to log tables? A dessert topping?

We're pretty sure it's not that last item, but whatever it is, the stacks keep stacking up. It's still too soon to subject stackware to our grueling reviewing process. So while the stackware authors get their bearings, we'll be giving you a glimpse of what *HyperCard* can do in Flash Cards. We've collected some of our favorites in the following pages. (You can find the shareware and freeware stacks on bulletin boards and the commercial stacks at your local software emporium.)

Some of these stacks are neat products; others are neat ideas. We hope they inspire you to create your own *HyperCard* stacks. And we hope you'll send a copy of your stack to Flash Cards, c/o *MacUser,* Suite 250, 110 Marsh Drive, Foster City, CA 94404.

Stack 'em Up

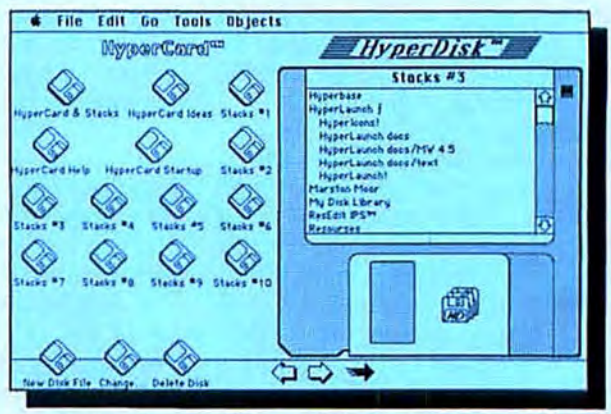




The Public Domain Exchange, a quarterly magazine for Apple and Mac users, joins the Hyper bandwagon with its series of stackware for business, personal use, productivity, communications, and games. *pCalc,* a paper-tape calculator, by Charles M. Davis, is just one of the selections available through the winter edition. From *The Public Domain Exchange,* 2074C Walsh Avenue, Santa Clara, CA 95050.

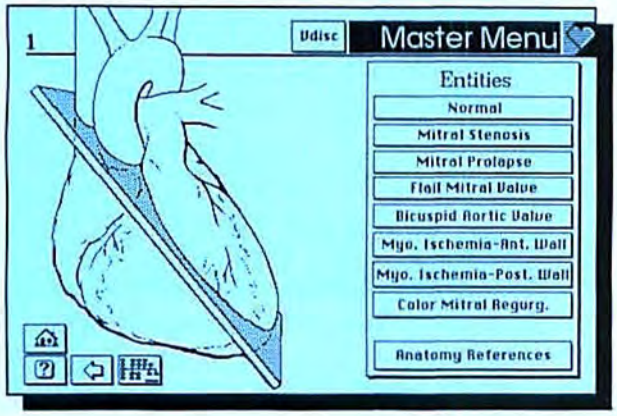
Flip Floppies

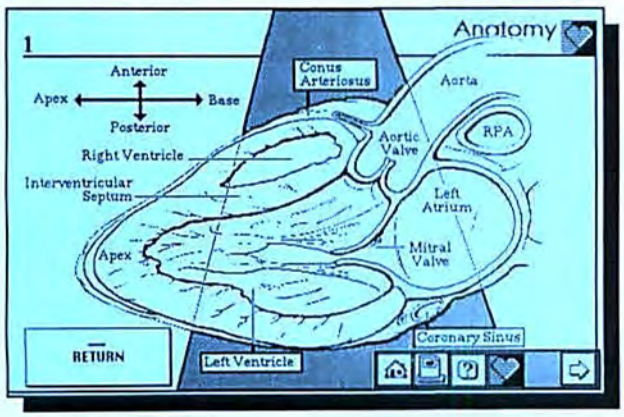


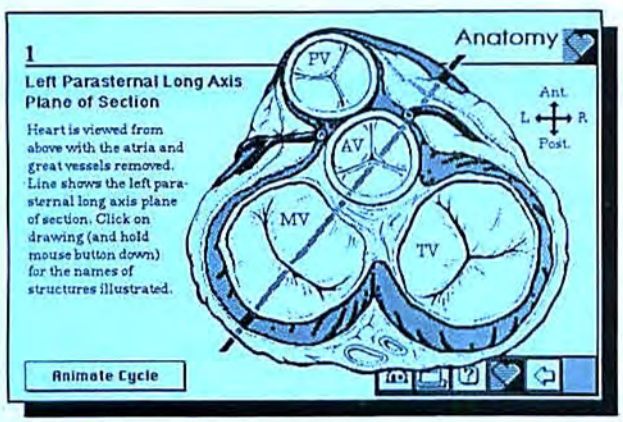


Flip through all your floppies with this stack meant for those who don't own a hard disk. It allows you to create category buttons easily. Enter your disk information, and you can zip through your files by clicking on the disk buttons. *HyperDisk* is shareware from Bill Steinbruegge, 750 East Parker Lane, Salt Lake City, UT 84106.

Heart Throbs

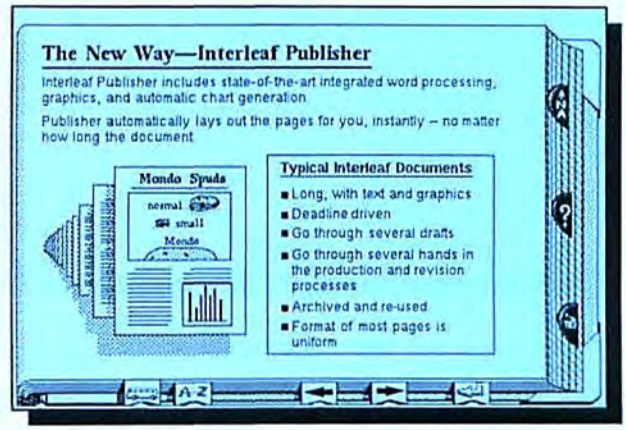


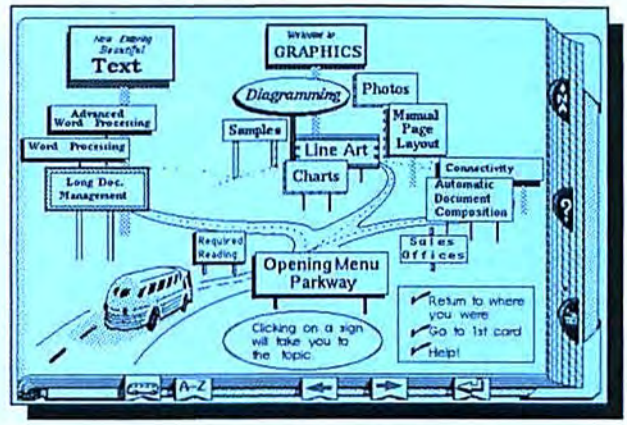


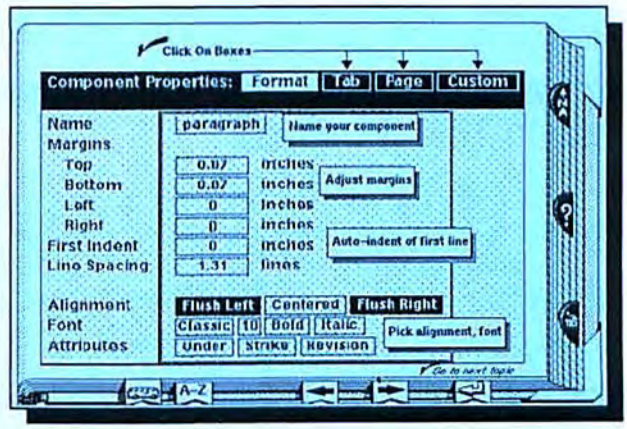


This stack on echocardiography was developed as a tool for medical education. It uses animated cartoons of heart movements and anatomy illustrations for reference. *Cardiac Imaging Project* from Patrick J. Lynch, Biomedical Communications, Yale University School of Medicine, 333 Cedar Street, I-E93 SHM, New Haven, CT 06510.

All in One

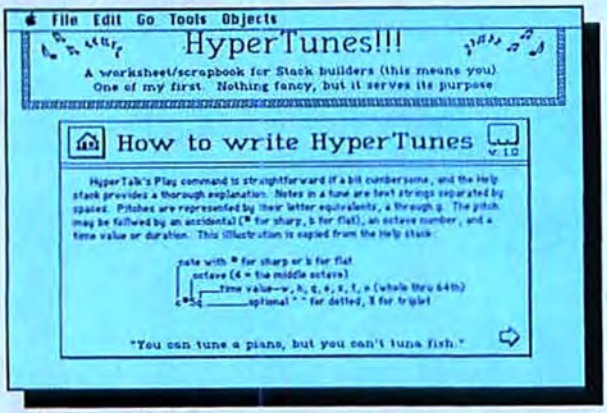






This stack is an introduction to *Interleaf Publisher*, the desktop-publishing package that does it all: integrates word processing, graphics, chart generation and page layout. From Interleaf, Ten Canal Park, Cambridge, MA 02141.

Tuning In

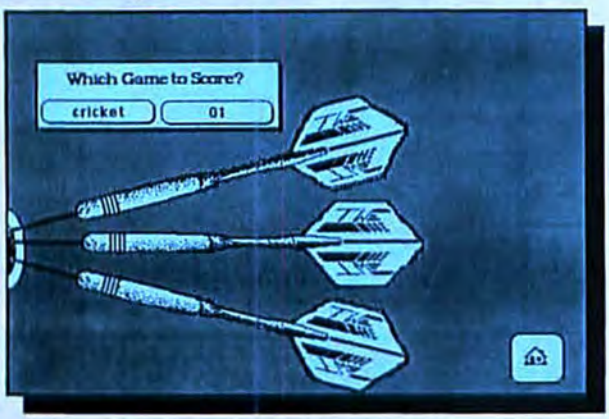


Store your tunes on the player cards. Vary the notes' duration, pitch, and tempo to achieve the sound you want.

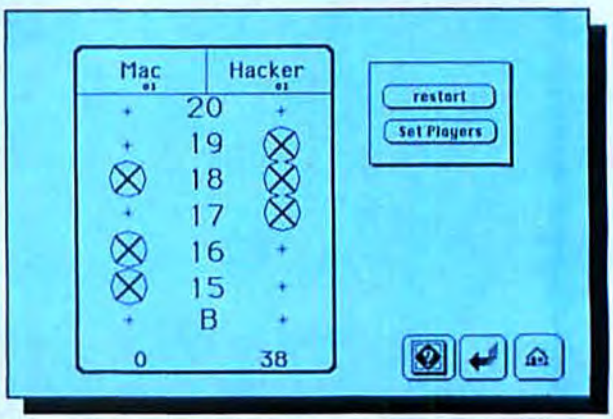


HyperTunes by Joe Niski, 3764 SE Stephens Street, Portland, OR 97214.

Bull's-Eye



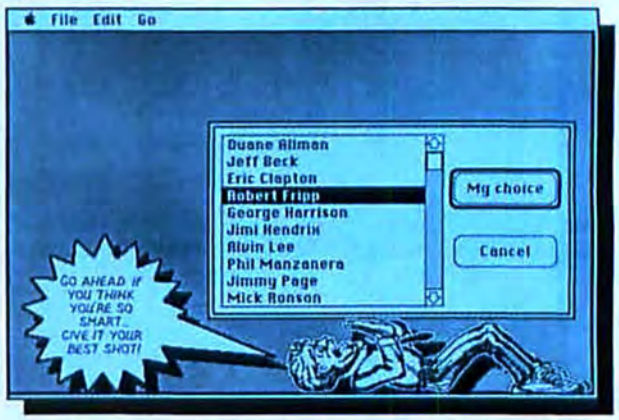
Let your Mac keep track of your dart scores — if you play cricket or 01 games. Most useful if your Mac and your dartboard are in the same room. *Dart Keeper* from Tom Wuthrich, 417 South Seventh, Apartment 2, Ann Arbor, MI 48103.



Name That Strummer

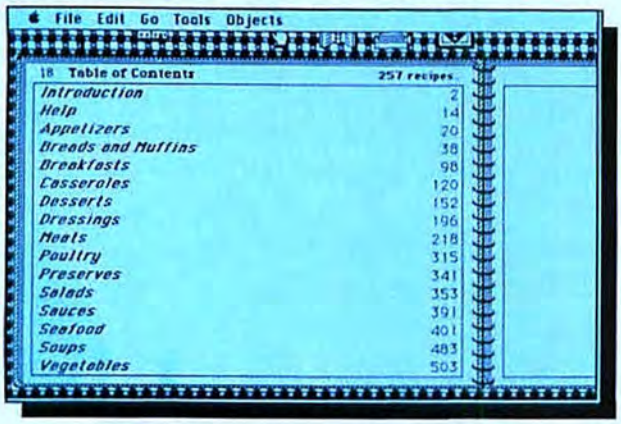


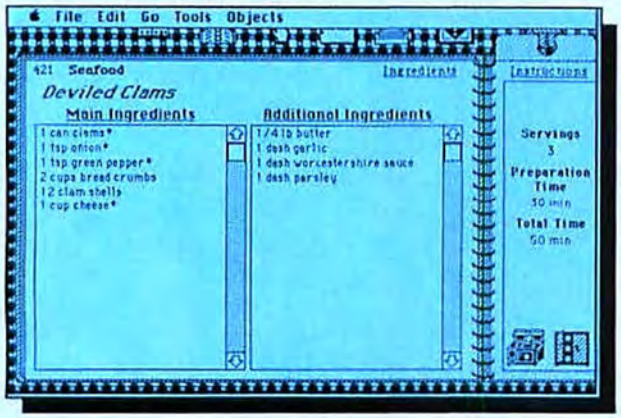
Test your knowledge of rock guitarists. This stack includes musical clues and other hints to help you guess their identity.

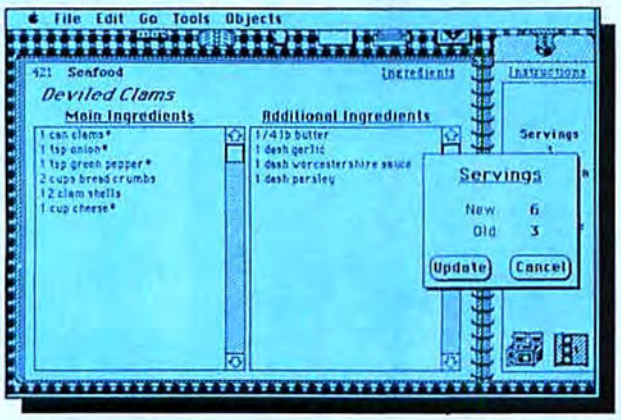


Name That Guitarist from Greg Neutra, Box 194, Cerrillos, NM 87010.

Mac Chef

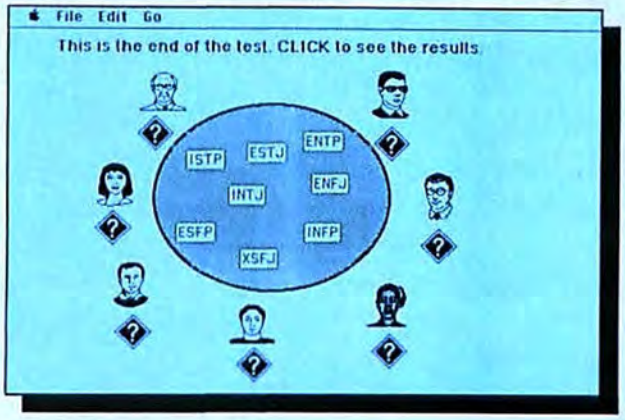


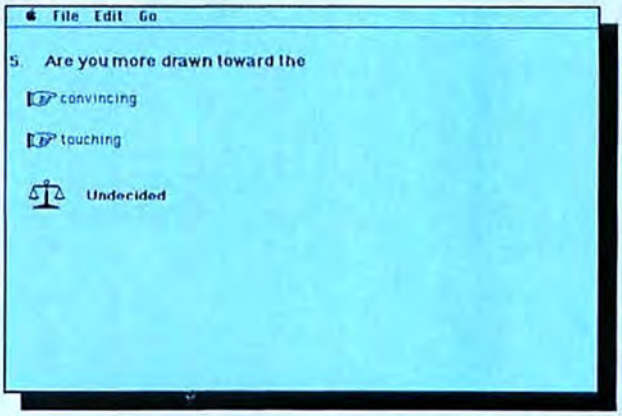


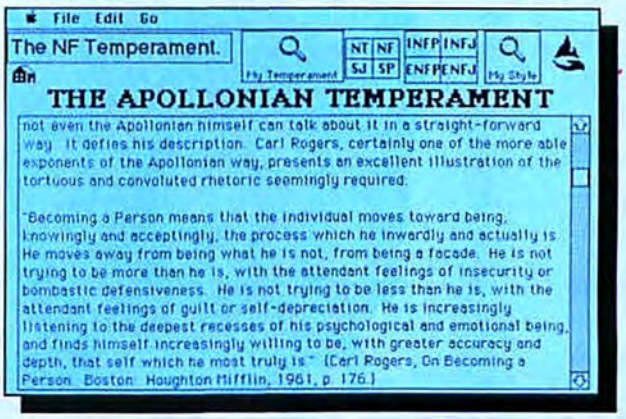


This stack of 250 New England recipes has additional features that will generate your shopping list, calculate ingredients for the number of people you're serving, match recipes to ingredients on hand, and let you add your own recipes. Does everything but the shopping and cooking. *HyperChef* from Bright Ideas, 52 Exeter Street, Portland, ME 04102.

Getting Personal







Answer the 70 questions on the *Keirsey Sorter* and get a brief description of your temperament (one of four types — Promethean, Apollonian, Dionysian, and Epimethean). Click "My Style" for your more detailed personality style. From R & D Intelligent Systems, 510 North Park Springs Court, Agoura, CA 91301.

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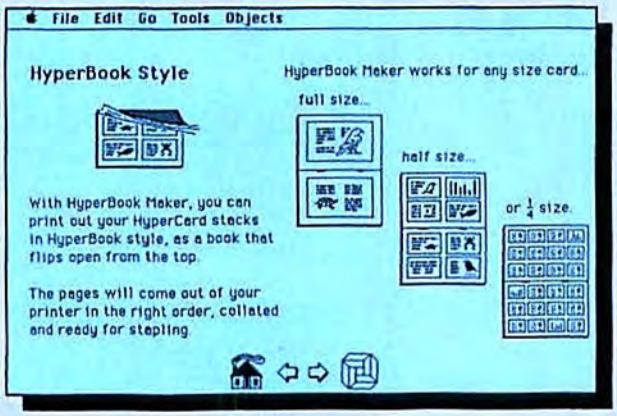


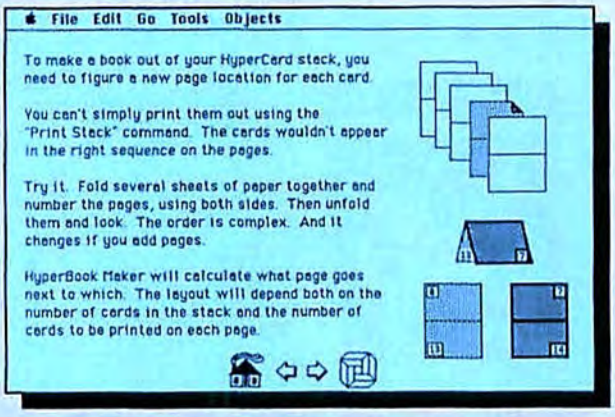
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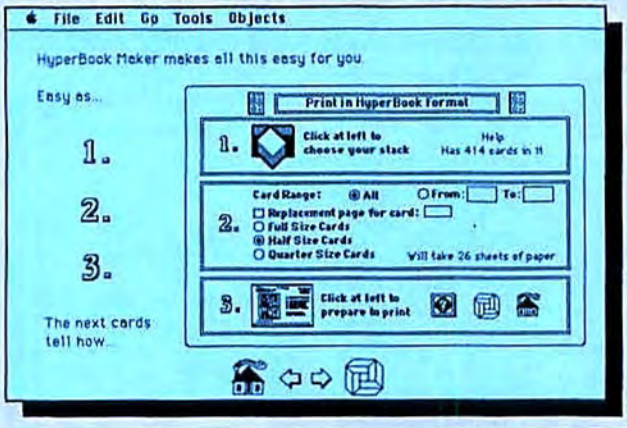
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Screen Them Out

This expanded version of *Electronic Call Screening* (originally appeared in our Jan '88 Flash Cards) answers with your prerecorded greeting. From Kanode Associates, 4709 E Sandra Terrace, Phoenix, AZ 85032.





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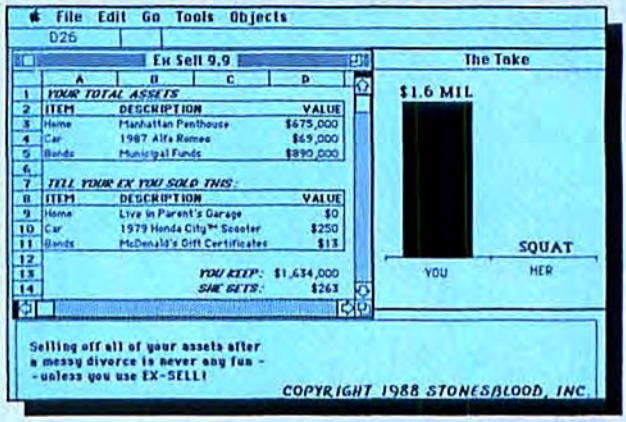
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CORPORATION

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C A R D S

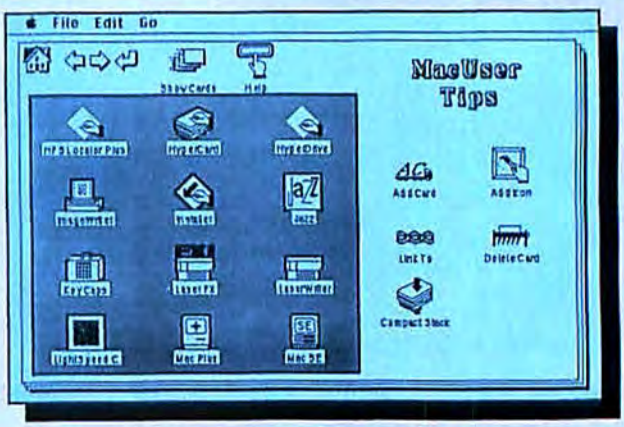
Totally Useless

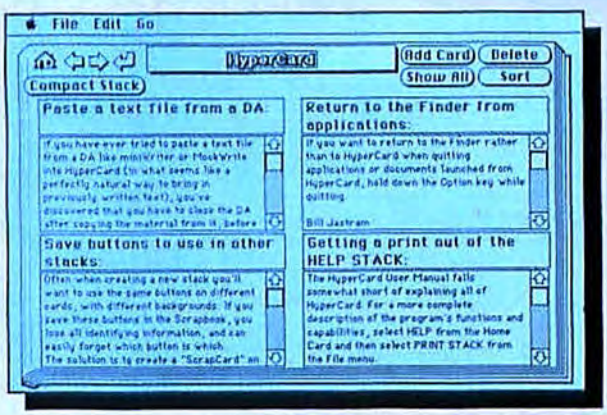




But "they're fun and not too shabby!" An entertaining stack from Andy Ihnatko, 33 Marshall Street, Westwood, MA 02090.

Tips to You





A collection of *MacUser* tips from June '86 to January '88. This stack has search capabilities. *MacUser Tips* is shareware from Gary Whitlock, 375 Upper Colesburg, Elizabethtown, KY 42701.

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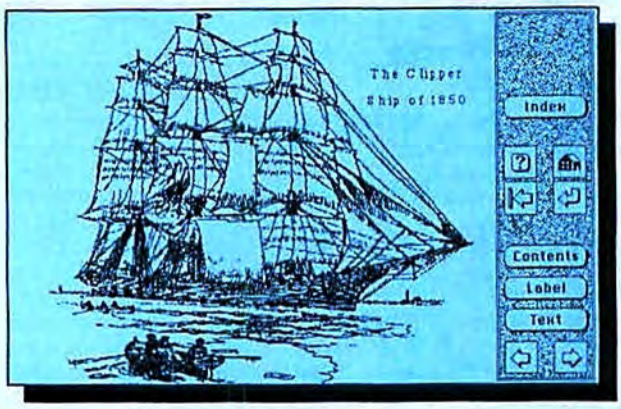
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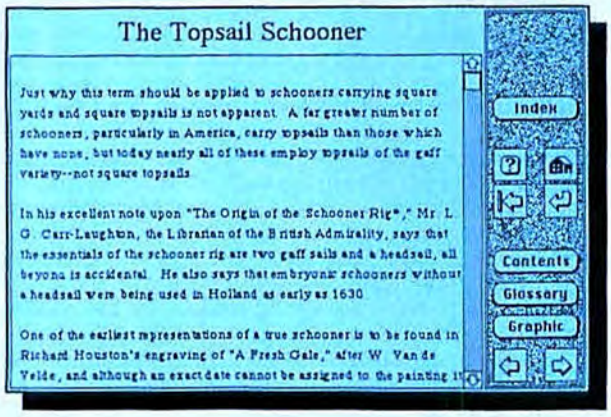
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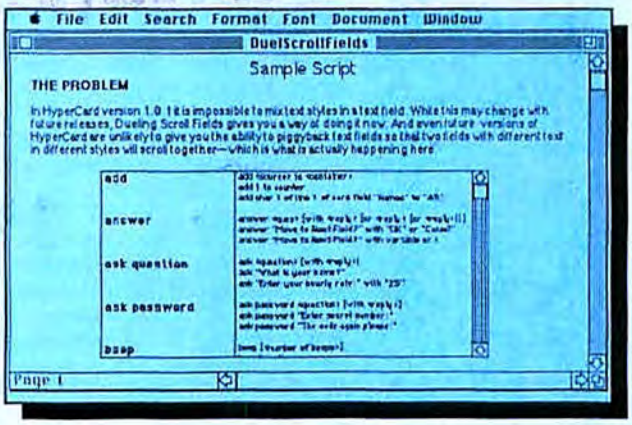
New Stack of Old Ships

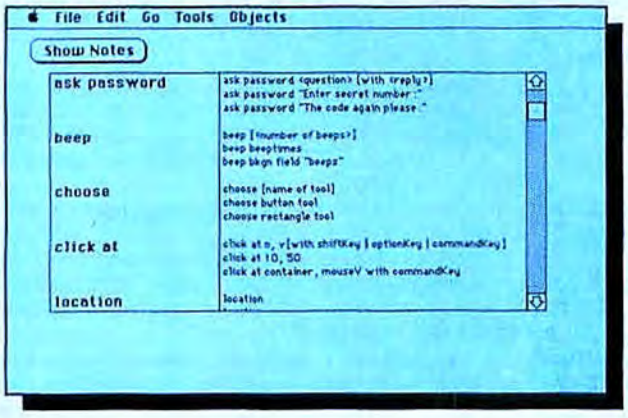




This entertaining and informative *Stack of Old Ships* contains illustrations and text descriptions of 60 classic wooden ships. Includes an appendix on the technology, evolution, and romance of these sailing ships. From Acme Dot Co., P.O. Box 5923 Titusville, FL 32783.

Just Scrolling Along





Dueling Scroll Field is a stack of fields, buttons, and scripts that let you mix text styles in a text field. One of many stacks from The Waite Group's upcoming book, *Hypertalk Power User's Guide*. From The Waite Group, 3220 Sacramento Street, San Francisco, CA 94115.



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MINIFINDERS



Have you often wished for a personal assistant to help in picking software? These MiniFinders may not breathe and move, but they do tell you what products are hot and, better, what these products do. Each of these items has been carefully reviewed and selected by the *MacUser* editorial staff. Each has been rated in increments of half mice, from 1 to 5. Ratings are relative within categories, and they can change as categories expand and new products advance the state of the art. You won't see many low ratings or bombs, since we're telling you about the cream of the crop, but we will warn you about the really bad products so that you don't spend your money on them. Red names indicate this month's additions. The letters at the end of the entries indicate whether a product is copy protected (CP) or not (NCP). If a product has been reviewed or Quick Clicked in *MacUser*, the date of the review is shown. Next time you have to find products you can count on, count on *MacUser*!

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INTEGRATED SOFTWARE

Jazz provides well-integrated modules for word processing, graphs, worksheets, databases, and communications. HotView is best feature. Requires 512K+ and external drive. Version 1A requires 400K drive. $395. Lotus, 55 Cambridge Parkway, Cambridge, MA 02142. CP (Prem)

Microsoft Works is an integrated application that includes word processing, database, spreadsheet, and telecommunications functions. The telecommunications module includes both background up- and downloading. $295. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (Oct 86)

Trapeze (version 2.0) is a powerful presentation worksheet that combines mathematical functions and graphic representation. The interface, which consists of an icon bar, can be awkward to use. Mac II and color supported. $395. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Dec 87)

BUSINESS ACCOUNTING

Accountant, Inc. V2.0 integrates accounts payable, accounts receivable, general ledger, and inventory modules. Prints checks, purchase orders, invoices, customized reports. Bare bones accounting system limited in size and scope, but ease of use and integration make it suitable for small businesses. Requires 512K+. $299. SoftSync, 162 Madison Ave., New York, NY 10016. NCP (Oct 87)

Back to Basics Accounting is a powerful double-entry accounting software package for the small business user with GL, AR, and AP modules. Exhaustive manual with numerous examples. Report capabilities are excellent. $199. Peachtree, 4355 Shackleford Rd., Norcross, GA 30093. NCP (May 87)

BPI General Accounting is an easy-to-use system. Six journals, AR, AP, Payroll, and GL on one disk. Offset amounts automatically post to ledgers. Up to 8000 accounts. Detailed records, wide range of reports. *Switcher* and HFS compatible. $249. Requires 512K+. BPI Systems, 3001 Bee Cave Rd., Austin, TX 78746. NCP (Aug 86)

CheckMark is a Ledger with five preset journals: Cash Disbursements, Receipts, General, Sales, and Purchases. Menus and data entry are very straightforward. Flexible summary reports are built in; customer and vendor info is very minimal. $295. CheckMark Software, PO Box 860, Fort Collins, CO 80522. CP (Dec 85)

Insight is a high-powered accounting program for the small-to-medium-sized business. Modules include Accounts Receivable, Payables, and General Ledger; others are in the works. Requires 512K and hard disk. $595. Layered, 529 Main St., Boston, MA 02129. NCP (Dec 86)

Rags to Riches integrated accounting modules (General Ledger and Accounts Receivable) uses Mac interface to the hilt. Information entered in one window automatically transfers. Detailed, flexible report options. Very easy to use, but it can be confusing with several windows on screen. Requires 512K+ and printer. $199.95 per module. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Dec 85)

Rags to Riches Professional Billing tracks and bills professional services. Batches activities for individual timekeepers. Use as standalone, or integrate with *R to R* modules. Requires 512K+, printer. $399.95. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Feb 87)

Strictly Business General Ledger features clear, well-outlined set-up procedures and operations. Very flexible, up to 99 profit centers with up to 100 departments each; and customized reports. Program print spools. Requires 512K+, printer and external drive. $395. Future Design, 13681 Williamette Dr., Westminster, CA 92683. NCP (Dec 85)

PERSONAL FINANCE

Dollars & Sense is a bookkeeping program. Easy to use, with a good manual and excellent on-screen help. Will handle up to 120 separate accounts or money categories. Uses standard double-entry accounting techniques. Will work on 128K. $149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. CP (Mar 87)

MacInTax is an excellent tool for preparing tax forms. Intuitive, easy to use. Accepts data from leading personal finance programs. Good built-in help. Liberal upgrade policy for current owners. California forms set also available. $119 federal; $65 California. SoftView, 4820 Adohr Lane, Suite F, Camarillo, CA 93010. NCP (Mar 87)

MacMoney is a complete and easy-to-use personal financial system. Intuitive data entry. Integrates with *MacInTax*. Requires 512K+. $74.95. Survivor Software, 11222 La Cienega Blvd., Inglewood, CA 90304. NCP (May 87)

MINIFINDERS



Market Pro is a comprehensive portfolio management program for ★★★★ the generation of fundamental data as well as technical charts and graphs. Requires 512K+, external drive, and Hayes-compatible modem. $395. Pro Plus Software, 2830 E. Brown Rd., Mesa, AZ 85203. NCP (Nov 86)

DATABASES

Business FileVision is a masterpiece of Macintosh programming, ★★★★ the only true graphic database on any micro. Much more powerful than the original, accepts *MacPaint* graphics. $395. Marvelin, 3420 Ocean Park Blvd., Santa Monica, CA 90405. NCP (Feb 86)

C.A.T. is a dedicated relational database for managing contacts, ★★★½ activities and time. Difficult to learn, but easy to use. Its rigid structure takes some getting used to, but links between types of data make it easy to keep track of important people and events. $299.95. Chang Laboratories, 5300 Stevens Creek Blvd., San Jose, CA 95129. NCP (Nov 87)

dBase Mac is a relational DBMS that includes a structured pro- ★★★★ gramming language to develop standalone applications. Palette icons as alternatives to menu commands will help novice users. Requires 1M+. $495. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502-1319. NCP (Feb 88)

Double Helix II is a powerful database that supports a multiuser ★★★★½ environment with an upgrade. Uses an icon-based development system for easy creation of databases. $595, single user version. Odesta, 4084 Commercial Blvd., Northbrook, Ill 60062. NCP (Apr 88)

File is a flexible data manager. Creates files for a variety of data, ★★★★ including simple graphics. Files are created in simple row/column format, but reports and forms are easily customized. $195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP

FileMaker Plus retains features of *FileMaker* and reads *FileMaker* ★★★★★ data, also displays up to 8 files, uses "lookup" to retrieve data from other files. Enhanced calculation with many additional functions. Scripts automate a sequence of actions. Requires 512K+. $295. Nashoba Systems, 1157 Triton Dr., Foster City, CA 94404. NCP (Nov 86)

4th Dimension is a powerful relational database that creates ★★★★½ standalone applications. Features a Pascal-like programming language environment. Somewhat slow. $695. Acius, 20300 Stevens Creek Blvd., Cupertino, CA 95014. NCP (Nov 87)

MacDewey! (version 2.5) is a cataloging program featuring the ★★★ Dewey Decimal Classification system. Uses predefined fill-in-the-blank fields to create catalog cards. Suffers from bugs in search routines and the inability to distinguish first names. Not for professionals; home libraries might benefit. $79.95. Mousetrap Software, 336 Coleman Dr., Monroeville, PA 15146. NCP (Nov 87)

MacRelax is a relational list manager that stores data in a column ★★ format. Files can be related by sharing a common field. Flexible design for reports. Screen display is sometimes strange. Easy to use but not obvious to learn. $59.95. 1M+ required. Arrays, 6711 Valjean Ave., Van Nuys, CA 91406. NCP (Jan 87)

Omnis 3 is a power database, featuring concurrent multiple file ★★★★ management. Can handle 24 files, 12 at a time, and is fully relational. Create custom environments, including user-defined menus, commands, and dialogs. $495. Blyth, 2929 Campus Dr., San Mateo, CA 94403. NCP (Mar 86)

OverVUE is a power-packed relational database that has extensive ★★★★½ sorting, summarizing, and report generation capacity. Has macros, and a charting function. Good manual. It can exchange files with a very wide variety of other programs (including IBM software). $295. ProVUE, 222 22nd St., Huntington Beach, CA 92648. NCP (Nov 85)

Professional Bibliographic System is a specialized database for ★★★★ storing and retrieving bibliographies. Redesigned templates (20) simplify creation. Version 2.6 offers improved speed, flexible formatting. $295. Personal Bibliographic Software, Box 4250, Ann Arbor, MI 48106. CP (Feb 87)

Record Holder is a flexible, easy-to-use form-oriented data manag- ★★★★ er. Setup is particularly simple and the search features are powerful. $69.95. Software Discoveries, 137 Krawski Dr., South Windsor, CT 06074. NCP (Apr 86)

Reflex For The Mac is a flexible relational database. Excellent ★★★★½ report generator gives full control over appearance, style of output. Requires 512K+, second drive, or hard disk. $99.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Dec 86)

Reflex Plus is a relational database with "smart" entry, and report ★★★★ design, but no overall programming facility. Simple to set up, yet fast. Graphic capabilities are quite limited. Version 1.0 reviewed. $279. Borland/Analytica, 4585 Scotts Valley Dr., Scotts Valley, CA 95066-9987. NCP (Feb 88)

Writer's Workshop maintains orderly records for writers. It can ★★★½ track manuscripts, income, and publisher. Based on and includes *Runtime Helix*. $99.95. Futuresoft System Designs, PO Box 132, New York, NY 10012. NCP (Apr 87)

NUMBER CRUNCHING

DesignScope is a construction kit for digital and analog circuits. Up ★★★★ to 254 components can be utilized in a single circuit, and the equivalent of a dual trace oscilloscope plots output in real-time. Good for testing circuitry without touching a breadboard. $249.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Nov 86)

Excel is THE power spreadsheet. Of the Mac, of the world. Has 256- ★★★★★ column by 16,384-row capability. Features include a powerful macro function (with a recorder to make creation simple) and elaborate charting facilities. 512K+ Mac and external drive required. $395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (Prem)

MacCalc is a fast, competent, full-featured spreadsheet with im- ★★★★ pressive built-in functions, font control, on-line help, ability to expand columns and rows, and read/write SYLK or WKS files. The worksheet is 125 columns by 999 rows. A very flexible, pure spreadsheet. $139. Bravo Technologies, c/o DPAS, PO Box T, Gilroy, CA 95021. NCP (Sep 86)

MacSpin is a unique and powerful graphic data analysis program. ★★★★ Handles multivariate data in a highly visual manner. Nothing else like it for any micro. $199.95. D² Software, PO Box 9546, Austin, TX 78766-9546. CP (Jun 86)

Mindsight is a professional level decision support and business ★★★★ planning package. Can work with IFPS on mainframes, and is able to transmit models in both directions. Powerful and easy to use. Requires 512K+. $249. Execucom Systems, PO Box 9758, Austin, TX 78766. CP (Dec 86)

Multiplan, the first Mac product from someone other than Apple, is ★★★½ beginning to show its age. Still a very capable basic spreadsheet with simple sorting, 63 columns by 255 rows, many built-in functions, other standard spreadsheet features. $195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP (Mar 86)

Parameter Manager is a data manager, incorporating integra- ★★★★ ted scheduling, statistics, and graphics. It has solid spreadsheet, calendar, and database functions and reports can be customized using other software. *Parameter Manager* can also import data from *Excel* or *Lotus 1-2-3*. $495. SMS, 651 River Oaks Parkway, San Jose, CA 95134. NCP (Jul 87)

MINIFINDERS 

StatView 512+ is a very intuitive statistical analysis program with ★★★★★ tools needed to understand any set of data. Holds data in a spreadsheet-like form. Full-featured, fast, and accurate. Extremely wide range of analyses possible. Requires 512K+ and 800K of disk space to operate. $349.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Dec 86)

GRAPHICS & DESIGN

CalendarMaker creates monthly calendars in a variety of formats. ★★★★½ Users can incorporate their art and daily notes. Note files can be imported from a variety of DA calendars and outliners. Shareware and prelicensed versions available. $49.95 CE Software, 801-73rd St., Des Moines, IA 50312. NCP (Dec 86)

Canvas is a Draw and Paint program that uses QuickDraw as its ★★★★½ output language. Full of features, including free rotation and one and two point perspective. Also has graphics macro commands, unusual in a program this inexpensive. $195. Deneba, 7855 N.W. 12th St., Suite 202, Miami, FL 33126. NCP (Jan 88)

Chart can easily create area, bar, column, line, pie, scatter, ★★★½ and combination charts. A total of 42 styles are provided. Limited to 100 data items (64 in a series) on a 128K Mac, approximately twice that on a 512K Mac. $125. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP

ClickArt Special Effects is a *MacPaint* enhancement desk acces- ★★★½ sory. Allows the user to distort, stretch, rotate, and use perspective on *MacPaint* documents. A necessary addition for all serious users of *MacPaint*. $49.95. T/Maker, 1973 Landings Dr., Mountain View, CA 94043. NCP (Apr 86)

ColorPrint allows you to print *FullPaint, MacPaint, MacDraw,* and ★★★ *MacDraft* documents in color using the ImageWriter II or ImageWriter I. *Paint* files set up as overlays are read into *ColorPrint*, and the program controls proper positioning registration. $29.95. I/O Design, PO Box 156, Exton, PA 19241. NCP (Mar 86)

Comic Strip Factory is an assembly program for creating comic ★★★★½ strips. Includes a database of parts for various characters and backgrounds for panels. Good text editing in balloons. Can import and export in *MacPaint* format. $89.95. Foundation Publishing, 10301 Yellow Circle Dr., Minneapolis, MN 55343. NCP (Dec 87)

Cricket Draw is an object-oriented drawing program that will pro- ★★★★★ duce stunning, high-quality output. Designed to print on PostScript-compatible devices, such as the LaserWriter. Making shadows and flowing fountain effects is just a point and click away. $295. Cricket Software, 30 Valley Stream Pkwy., Malvern, PA 19355. NCP (May 87)

Cricket Graph easily generates 12 graph types. Multiple windows ★★★★★ can be displayed. *Graph* prints in up to 8 colors with up to 16 patterns. Self-generating macro formatting. *Switcher,* HFS, LaserWriter, and plotter compatible. $195. Cricket Software, 30 Valley Stream Pkwy., Malvern, PA 19355. NCP (Jun 86)

Crystal Paint creates an electronic kaleidoscope. It is *MacPaint*'s ★★★★½ Brush Mirrors gone wild in a small, simple, yet wonderful application. Does not work in color on Mac II. *MultiFinder* friendly. Requires 512K+. $49.95. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Feb 88)

DeskPaint is a full-blown paint program as a desk accessory. Allows ★★★½ you to spruce up a graphic while in another application. Imports and exports *MacPaint* and TIFF images. Great for DTP, but not enough features to rival the leaders in paint programs. Zedcor, 4500 E. Speedway, Tucson, AZ 85712-5305. NCP (Mar 88)

"Draw It again, Sam..." (v. 1.03) is an object-oriented graphics ★★★★ program, like *MacDraw,* that adds such useful wrinkles as layered drawing, on-screen libraries, and color. Manual is weak. Requires 512K+ and an 800K disk drive. $150. Aba Software, PO Box 850, Frazer, PA 19355. NCP (Feb 88)

Easy3D is a three-dimensional, solid modeling masterpiece. ★★★★ Four variable light sources, powerful sculpting tools, and an exquisite user interface make this a must-have for graphics enthusiasts. Requires 512K+. $149. Enabling Technologies, 600 S. Dearborn, Chicago, IL 60605. NCP (May 86)

EZ Draft is a high-level CAD application. Does things usually only ★★★ found on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of printer/plotter/monitor drivers. A real powerhouse. $1995. $500 for IEGS module to link to other CAD programs. Bridgeport Machines, 500 Lindley St., Bridgeport, CT 06606. CP (May 87)

FastForms! Construction Kit is both a fast and efficient business ★★★★★ forms creator (a drawing program) and a specialized application (and DA) to fill out the data fields in your forms. $149 (US). Shana Enterprises, 9704 54th Ave., Suite 200, Edmonton, Alberta T6E 0A9, Canada. NCP (Nov 87)

Fluent Fonts is a two-disk collection of fonts. Forty-nine different ★★★★ items are included. All install easily in user systems. Most are well executed and some are extraordinarily nice. This is a real bargain for font lovers. $49.95. CasadyWare, PO Box 223779, Carmel, CA 93922. NCP

Fontastic is the best font editor now available for the Mac. Features ★★★★½ a large editing window with a grid to make positioning easy. Select letters to edit by clicking on a matrix of the font. Allows scaling of existing fonts and previewing the various styles. $49.95. Altsys, PO Box 865410, Plano, TX 75086. NCP (Dec 85)

Fontographer is a complex, but excellent laser font creator. The ★★★★½ fonts created have 300 bits-per-inch resolution. The fonts are actually downloadable PostScript files. $395. Altsys, PO Box 865410, Plano, TX 75086. CP

FullPaint is an expanded version of *MacPaint.* Features include full- ★★★★★ screen drawing, multiple documents opening simultaneously, brush editing, movable tool palettes, special text effects, and much more. It fills the gaps left by *MacPaint.* $99.95. Ashton-Tate 20101, Hamilton Ave., Torrance, CA 90502-1319. NCP (Jun 86)

GraphicWorks 1.1 is a powerful drawing and painting program that ★★★★ creates high-resolution bit-maps. Easels contain graphics, balloons hold text, and both reside on panels. Graphic primitives are now a separate tool. $149.95 Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. NCP (Oct 87)

GraphIdex indexes *MacPaint* and *MacDraw* format graphics without ★★½ removing them from their original documents. Indexed graphics are retrieved via the *Graphidex* DA. Can modify an indexed graphic without affecting the original. Best for bit-mapped (*Paint* format) images but the design is questionable and the execution imperfect. Requires 512K+. $124.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (May 87)

GridMaker is a tool for artists who use perspective. The program ★★★ automatically generates a series of three-dimensional plane sets that can be pasted into *MacDraw.* Sizes and viewing vantage points are easily modified. $49. FolkStone Design, PO Box 86982, North Vancouver BC V7L 4P6, Canada. NCP (Nov 86)

Illustrator is a professional-level graphics program. Unique and ★★★★½ powerful drawing technique. Program uses templates for precise and detailed art work. Requires 1M+. $495. Adobe Systems, 1870 Embarcadero Rd., Palo Alto, CA 94303. CP until registered (Jul 87)

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MINIFINDERS



Japanese Clip Art is a two-disk set of extraordinary Japanese clip ★★★★½ art. Consists of *MacPaint* documents and separate fonts. Volume I, Heaven, covers mythological subjects; Volume II, Earth, has secular subject matters. $79.95 each volume; $149.95 set. Qualitas Trading, 6907 Norfolk Rd., Berkeley, CA 94705. NCP (Apr 87)

LaserFonts are new fonts for the LaserWriter. Users download ★★★★ them to their machines. Very high quality and very simple to use. *Willamette* looks like Avant Garde. *MicroFonts* provides tiny, expanded, and condensed versions of the LaserWriter's own fonts. $34.95 to $44.95 each. Century Software, 2483 Hearst, #175, Berkeley, CA 94709. NCP

LaserPaint's clumsy interface makes it a slow program. There's ★ good laser output, if you persevere through the creation of a document. The support is scads better than the documentation, which is lousy. Version 1.1.4. $495. LaserWare, PO Box 668, San Rafael, CA 94915. CP (Jan 88)

Lasertalk is a PostScript programming tool that establishes interac- ★★★★★ tive contact with laser printers. Preview window and on-line help make it a powerful tool. Requires 1M+ and a PostScript Printer. $249. Emerald City Software, PO Box 2103, Menlo Park, CA 94026. CP until registered (May 88)

The Mac Art Dept. is a collection of over 150 graphic images ★★★★ ranging from foods to hands holding signs to borders. Best suited for letterheads, memos, other business use. $39.95. Simon & Schuster, Computer Software Div., 1 Gulf + Western Plaza, New York, NY 10023. NCP (Mar 86)

Mac-a-Mug is an Identikit type program for creating faces from ★★★½ facial feature files. Uses scroll bars that are slow and jerky. Lots of creative fun. 1M+ Mac required. $59.95. Shaherazam, PO Box 26731, Milwaukee, WI 53226. CP (Jul 86)

MacCalligraphy is the best simulation of brush painting in any graph- ★★★★½ ics program. User-designed Seals and Touches enable you to design your own signature tool and the style of brush you use. Comes with a clip art disk. $175. Qualitas Trading, 6907 Norfolk Rd., Berkeley, CA 94705. NCP (Feb 88)

MacDraft is an object-oriented graphics program. It sports ad- ★★★★ vanced features such as variable scaling, single degree rotation, complex arcs, and a FatBits-like magnification mode. Best used to complement *MacDraw*, not replace it. $269. Innovative Data Design, 2280 Bates Ave., Concord, CA 94520. NCP (Feb 86)

MacDraw is an object-oriented structured graphics program. Can ★★★★½ be used to design forms, create presentation materials, and do technical illustrations. Drawing sizes up to 8 feet by 10 feet are possible. Text can be easily generated and integrated in the graphics. $195. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Nov 85)

MacModel is an economical 3D package with shading. Somewhat ★★★ sketchy Mac interface, shading speed slow (but acceptable), grainy image resolution. On-line help screens are a welcome addition. Frequent updates and low price make this a reasonably good buy. $40. A.P.P.L.E. CO-OP, 290 SW 43rd St., Renton, WA 98055. NCP (Aug 86)

MacPaint is the graphics program that started a whole new genre. ★★★★ Still the best freehand graphics tool. Version 1.5 supports 512K+ Macs and the LaserWriter. Multiple tools, patterns, and features too numerous to describe. A work of art for artists. $125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP

Mac3D 2.0 is a feature-laden 3D program with a *MacDraw*-like ★★★★ interface. PostScript-resolution shading with six variable light sources, user-definable tools, and many more features make this a powerhouse. $249. Challenger Software, 18350 Kedzie Ave., Homewood, IL 60430. NCP (Jan 87)

MapMaker produces maps and analyses of related geographical ★★★★½ data. Additional data disks available. Documentation could be better. Requires 512K+; 2nd drive recommended. $295. Select Micro Systems, 40 Triangle Ctr., Yorktown Heights, NY 10598. NCP (Jan 87)

MGMS: Professional CAD for Macintosh offers more than 200 ★★★★ functions. Very complete, capable program. Groups, Dimension, Libraries, etc., are standard. Sometimes confusing — designed for experienced, professional CAD user, not the novice. Full plotter support. 512K+. $799. Micro CAD/CAM, 3230 Overland Ave., Los Angeles, CA 90034. NCP (Nov 87)

MiniCad V3.0 is a pro level CAD package. Vast array of features, ★★★★ many accessible only through Command/Shift/Option key combinations. Works in 2D or 3D with easy transition from one to the other. *MacDraw*-like interface makes it easy to learn and use. Requires 512K+. Diehl Graphsoft, 8370 Court Ave., Suite 202, Ellicott City, MD 21043. CP (Oct 87)

Phoenix 3D is an economical 3D drawing package, with features ★★★★ that belong in a more expensive program. Multiple light sources, fine object placement, and orientation control, and a good selection of shapes. $49.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP (Oct 86)

PictureBase is a powerful graphic librarian. You can store paint and ★★★★½ PICT formatted items and attach keywords for later search and retrieval. $69.95. Symmetry, 761 E. University Dr., Mesa, AZ 85203. NCP (Sep 87)

PixelPaint is a color paint program with customizable palettes and ★★★★½ lots of special effects. Slow OPEN and SAVE. Requires Mac II and 8-bit video card. $495. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (May 88)

The Print Shop makes it easy to create greeting cards, signs, ★★★½ banners, and letterheads. Uses its own special graphics and can import *Paint* files. Hard disk users get version 1.02 or higher. $79.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Sep 87)

Slide Show Magician 1.3 is useful for creating full screen audio- ★★★ visual presentations on the Mac. Frame branching, improved editing capabilities, external cassette recorder synchronization, and digitized sound capabilities make this much more powerful than the original. $59.95. Magnum, 21115 Devonshire St., Chatsworth, CA 91311. CP (Mar 86)

Space Edit is a 3D CAD program. Display shows top, front, side, ★★★½ and axonometric views of an object, all at once or one at a time. Has standard CAD features plus zoom, exploded view, animated flyover. Suppression of hidden lines is very slow. Requires 1M+. $625. Abvent, 9903 Santa Monica Blvd., Beverly Hills, CA 90212. CP (Jul 87)

Storyboarder produces working animated storyboards for use in ★★★★ film and video production. Imports graphics from *MacPaint;* allows screen masking to simulate television, 35mm or 70mm screen widths; allows limited animation and special effects. $495. American Intelliware, PO Box 6980, Torrance, CA 90504. CP (Nov 86)

SunShine Graphics Library is a collection of 46 400K disks (to ★★★★ date) with a wide variety of high-quality digitized images stored as *MacPaint* files. $20/disk: discount scale for multiple purchases. SunShine, Box 4351, Austin, TX 78765. NCP (Feb 87)

SuperPaint is a powerful, easy-to-use graphics program with all the ★★★★★ best features of *MacPaint* and *MacDraw* — and then some. LaserBits provides 300 dpi magnification and there are 40 editable brush shapes. Requires 512K+. $149.95. Silicon Beach, 9580 Black Mountain Rd., PO Box 261430, San Diego, CA 92126. NCP (Feb 87)

TrueForm takes a scanned image of a paper form and turns it into ★★★★½ an electronic equivalent, complete with fields, for entering data. It can automatically sum numeric fields. Requires external 800K drive. $495; run-time version, $295. Spectrum Digital Systems, 2702 International Lane, Madison, WI 53704-3122. NCP (May 88)

MINIFINDERS



VideoWorks II is an easy-to-use animation tool — the best avail-
★★★★½ able on the Mac. Has an Overview mode that acts as a slide show carousel for presentations. Works in color on the Mac II. $195. Requires 1M+ and an 800K drive. MacroMind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Mar 88)

WetPaint consists of two 3-disk volumes of very high quality clip
★★★★★ art. Also includes the *Art Roundup* DA, a good art browser/editor. Volume 1 or 2, $39 each; both volumes, $59. Available in *PictureBase* format for $15 extra per volume. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Sep 87)

World-Class Fonts! comes in two volumes of three disks each.
★★★★½ Includes all the *Mac the Knife* fonts and a lot more, including 2 useful utilities. This is now the best collection of ImageWriter fonts available. Each volume: $39; both volumes: $59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Dec 86)

DESKTOP PUBLISHING

Interleaf Publisher is a speedy multiuser layout system for produc-
★★★½ ing large, complicated documents. Has strong global formatting ability but can't use downloadable fonts. Requires Mac II with 5M of RAM and 40M hard disk, $2495. Interleaf, 10 Canal Park, Cambridge, MA 02141. NCP (May 88)

JustText is a professional level word processor and page makeup
★★★★½ program that generates PostScript output. Comes with a set of LaserWriter utilities that allow total manipulation of art and text. Requires LaserWriter or other PostScript compatible output device. $195. Knowledge Engineering, GPO Box 2139, New York, NY 10116. NCP (Dec 85)

MacTEX (v. 2.0) is the TeX environment of choice for hardcore TeX
★★★½ users on the Macintosh. Very intimidating for others. Painfully slow and visually unattractive. Requires 1M+. $750. FTL Systems, 234 Eglington Ave. East, Toronto, Ontario M4P 1K5, Canada. NCP (Apr 88)

PageMaker uses a graphics studio metaphor to make this layout
★★★★½ program a natural for pasteup artists. Version 2.0 adds automatic kerning and hyphenation. Still the standard. Excellent documentation. Could use a global search and replace for design elements. $495. Aldus, 411 First Ave. South, Seattle, WA 98104. NCP (Oct 87)

Portfolio: Designs for Newsletters provides over 20 templates for
★★★★ 2-page newsletters with pre-set columns, headlines, graphics, and captions. Documentation provides excellent tutorial in page design. Requires 512K+; *PageMaker.* $79.95. Aldus, 411 First Ave. S., Suite 200, Seattle, WA 98104. NCP (May 87)

QuarkXPress is a high end desktop publishing application. Layout
★★★★★ is done in block format; powerful lining tool ties blocks together. $695. Quark, 200 S. Jackson, Denver, CO 80209. NCP (Sep 87)

Ragtime is an "Integrated Page Processor" with text, graphics, and
★★★★ built-in spreadsheet. Flow text automatically from one frame to another. Spreadsheet has a full set of functions. Excellent, easy-to-use program. Requires 512K+. $395. Orange Micro, 1400 N. Lakeview, Anaheim, CA 92807. NCP (Apr 87)

Ready, Set, Go! 4 has an elegant interface and excellent manual.
★★★★½ Powerful text wraparounds, fast word processor with hyphenation and spelling check and custom stylesheets. Requires 1M+. $495. Letraset, 40 Eisenhower Dr., Paramus, NJ 07652. NCP (Feb 88)

Scoop could someday be the world's best desktop publishing pro-
★★½ gram, but version 1.0 isn't it. There are various ways to cause the program to bomb which need to be fixed. The manual is poorly organized and lacks tutorials. $495. Target Software, 14206 SW 136th St., Miami, FL 33186. NCP (Feb 88)

TeXtures (v. 1.0) is an implementation of TeX, the big daddy of
★★★ typesetting programs. Good for people trained on mainframes in the early days. Otherwise very sticky with a high learning curve. Requires 512K+. $495. Kellerman & Smith, 534 S.W. 3rd Ave., Portland, OR 97204.. NCP (Apr 88)

COMMUNICATIONS

AppleShare is the long awaited file sharer from Apple. Software-
★★★★ based, *AppleShare* requires you to dedicate a Mac and a hard disk to run it. Allows users on the network to protect things from other users on the folder level. Interface to network is provided at a revised *Finder.* $799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (May 87)

ComServe allows you to share a Hayes-compatible modem over an
★★★★ AppleTalk network. You can call out, but you can't call in. Works with most telecommunications packages. $195 per server. Infosphere, 4730 SW Macadam Ave., Portland, OR 97201. CP (Feb 88)

Desktop Express is a simple to use, semi-automated program
★★★½ for using MCI Mail and Dow Jones News/Retrieval. Performance is traded off for ease of use. Requires 512K+. $149. Dow Jones, PO Box 300, Princeton, NJ 08543. NCP (Jan 88)

HomePak is a package consisting of *HomeTerm,* an excellent, sim-
★★ ple telecommunications program with strong macro features; *HomeFind,* an electronic filer as bad as *HomeTerm* is good; and Apple's *Edit,* a simple, non-HFS-compatible text-file editor. $49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Sep 86)

InBox is an easy-to-use mail system. It's called up from a desk
★★★★½ accessory. Has a very slick interface. Dedicated Mac not required. $350 for starter set which includes one Administrator disk and three Connection disks. Additional Connections cost $125 each. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (May 87)

InTalk comes with its own communications command language
★★★★½ able to do unattended sessions. Supports Xmodem and MacBinary. Has a macro key function. Many sample setup documents and command language files provided. $195. Palantir, 12777 Jones Rd., Houston, TX 77070. NCP (Prem)

MacTerminal provides basic telecommunications and terminal em-
★★½ ulation. Doesn't have macros nor any sort of auto re-dial/auto log-on capability. Best for those needing faithful VT100 or IBM 3278 emulation — it is superb at those. $125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Prem)

Microphone is a high-powered terminal program that's easy
★★★★½ enough for novices. Very powerful command language allows full automation of communications, if desired. $149. Software Ventures, 2907 Claremont Ave., Berkeley, CA 94705. NCP (Jul 86)

Microsoft Mail is an electronic mail system that runs under Apple-
★★★★½ Talk. Supports file transfers across the mail system. Full online help facility. Also includes "While you were out" messages. Desk accessory based. Prices determined by number of users licensed. One to four users, $299.95; 5 to 10 users, $499.95; 11 to 20 users, $749.95; 21 or more users, $949.95. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (May 87)

Red Ryder is a full-featured telecommunications program that sup-
★★★★★ ports MacBinary, Xmodem, and Kermit. Has big screen support, auto procedure creator, and up to 30 keyboard macros. This is the cream of the crop (in late 87). $80. Freesoft, 150 Hickory Dr., Beaver Falls, PA 15010. NCP (Dec 87)

Smartcom II balances power and ease of use. Capable of unattend-
★★★★½ ed operation and has a very powerful command language. Supports MacBinary, Xmodem, and Hayes Verification pro-

Has that statistics package you thought was a tiger turned out to be something else?



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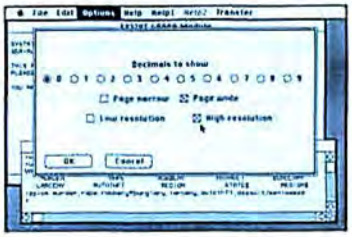
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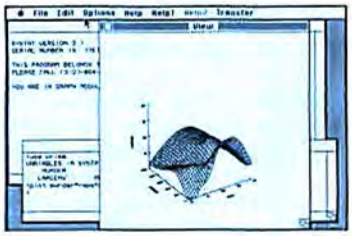
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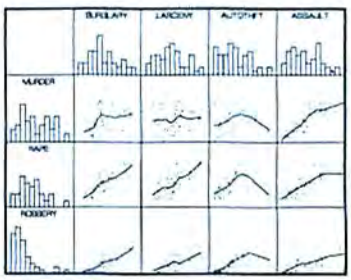
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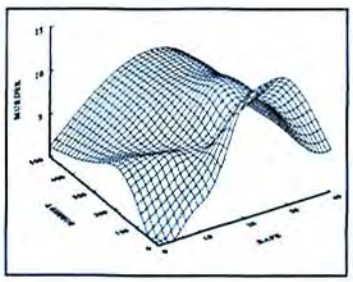
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MINIFINDERS



tocols. The large screen buffer can easily be archived. $149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jul 86)

Telescape is the power telecommunicator's terminal program. Can ♦♦♦ be configured to emulate any terminal. The documentation does not adequately explain the many features. $125. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jun 86)

TOPS is a file server designed to network computers with different ♦♦♦♦½ operating systems. Supports Macs, MS-DOS compatibles, and UNIX. Access to files and subdirectories is transparent to the user; they appear as Mac folders. Only handles ASCII or Text files. $149 for Mac version. $389 for PC's (comes with add-on card). TOPS, 2560 Ninth St., Berkeley, CA 94710. Serial number protected. (May 87)

VersaTerm features include DEC VT100 and VT52, Tektronix 4014 ♦♦♦♦½ graphics terminal and Data General DG200 emulation. Supports Xmodem and *MacTerminal* Xmodem protocols and MacBinary. *VersaTerm* is easy to use and well-documented. $99. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mt. Penn, PA 19606. CP (Prem)

VersaTerm-Pro is a very powerful terminal program with several ♦♦♦♦½ special features. Does one of the best VT100 emulations available and specializes in high-quality Tektronix 4014 and 4105 emulation. A pro's tool. Requires 512K+. $295. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mt. Penn, PA 19606. NCP (Apr 87)

WORD PROCESSORS

Document Compare allows users to compare any two *MacWrite* ♦♦♦ 4.5, ASCII, or MDS documents. Differences in spelling, punctuation, formatting, and wording are detected. Documents can be printed out with differences highlighted. $99. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (May 86)

Document Modeler can automate much of a professional office's ♦♦♦♦½ correspondence. Comes in two parts: *Template Maker* and *Document Maker.* Initial setup requires time and is complex. $299.95. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (Mar 87)

Doug Clapp's Word Tools is a useful punctuation and style editing ♦♦♦♦ program. It won't turn you into a Proust, but it will help you make your writing cleaner and clearer. Word counts among different formats show discrepancies, but not to worry. Requires 512K+. $79.95 Aegis Development, 2125 Pico Blvd., Santa Monica, CA 90405. NCP (Sep 87)

Expressionist is a powerful DA that allows you to create complex ♦♦♦♦♦ mathematical equations from within an application. Equation manipulation has never been easier. $79.95. Allan Bonadio Associates, 1579 Dolores St., San Francisco, CA 94110. NCP (Jul 87)

Kadmos Greek Font is a full character set of ancient Greek that ♦♦♦½ prints on any PostScript printer. Requires learning new typing skills, but excellent quality makes it worth the effort. Allotype Typographics, 1600 Packard Rd., Ann Arbor, MI 48104. NCP (Oct 87)

Laser Author is a high-powered, technically oriented word proces- ♦♦♦½ sor. Good math setting capability. Has style sheets, word count, and page layout capability. $199.95. Firebird Licensees, PO Box 49, Ramsey, NJ 07446. NCP (Mar 87)

Liberty Spell Checker is a fast, effective, interactive checker. The ♦♦♦½ dictionary is smaller than average, but well chosen. Unfortunately, it has a few misspelled words. $59.95. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Oct 86)

Lookup is an on-call, quick single word spelling checker. Designed ♦♦♦♦♦ for the way writers really work. Uses the 93,000+ word *Spellswell* dictionary. $49.95. Working Software, 321 Alvarado, Suite H, Monterey, CA 93940. (Dec 87) NCP

MacGAS is a DA spelling checker with both a small and extended ♦♦♦ dictionary. Its best point is the excellent thesaurus, provides antonyms & glossary. A slow checker. $99. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. CP (Oct 86)

MacProof is a grammar, style, and spelling checker that's like ♦♦♦♦½ having your own personal copy editor. Grammar rules are fixed, and you may not agree with the choices. The program only suggests corrections, it doesn't make them for you. And the checking process can be slow if your document is long. $195 for standalone version; $2500 for networked version. Automated Language Processing Systems, 190 West 800 North, Provo, UT 84604. NCP (Apr 87)

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MINIFINDERS



Macspell+ (version 1.10) is a spelling checker that installs as a desk accessory. Works easily with *MacWrite* 4.5 and 2.2 and *Word*, but has some drawbacks. New version just available. Requires 512K+, two drives or hard disk. $99. Creighton Development, 16 Hughes St., Irvine, CA 92718. NCP

MacWrite is the basic Mac word processor. While it doesn't have every bell and whistle, it is more than adequate for most users. Features include global search and replace, page numbers indicated in the scroll bar, and excellent LaserWriter compatibility. $125. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP

MergeWrite is a mail merge program for *MacWrite* (also works with ASCII files). Program combines names and addresses from a data file into predefined fields in a form letter. Also allows simple conditional IF-THEN-ELSE equations. $49.95. Software Discoveries, 137 Krawski Dr., South Windsor, CT 06074. NCP (Dec 87)

MindWrite integrates outlining and word processing better than anyone. Version 1.1 fixes many problems of the earlier version. Sophisticated search and select options. Unimpressive speed. $295. Access Technology, 555C Heritage Harbor, Monterey, CA 93940. NCP (Feb 88)

QUED/M (v. 2.01) is an excellent text editor that saves documents in a form readable by most computers, and printers. Doesn't support graphics or multiple fonts. Programming language allows creation of database. $129. Paragon Concepts, 4954 Sun Valley Rd., Del Mar, CA 92014. NCP (Mar 88)

QuickWord is a word processing accessory that adds sophisticated glossaries to *MacWrite*. Simple to install and use, yet powerful and efficient. $49.95. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. NCP

Scriptor is designed for producing standard format scripts. Starts with a *Word* document. As you change your *Word* document, *Scriptor* will reformat, renumber, and reprint the script. Supports LaserWriter and daisywheel printers. $295. Screenplay Systems, 348 E. Olive Ave., Suite F, Burbank, CA 91502. NCP (May 87)

Spelling Champion is a fast and accurate batch-type spelling checker. Backup feature allows you to undo corrections in a paragraph. Works only with *MacWrite* 4.5. $39.95. Champion Software, 6617 Gettysburg Dr., Madison, WI 53705. NCP (Oct 86)

Spellswell is an effective and powerful standalone spelling checker. It has many advanced features such as capitalization and homonym checking and comes with a large, well-chosen dictionary. Very good dictionary, good value. $74.95. Working Software, 321 Alvarado, Monterey, CA 93940. NCP (May 86)

Thunder! is one of the best spelling checkers around. Features Learned Words (a superb glossary) and statistics. A very fast DA, it works interactively and in selection mode. Requires 512K+. $49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Dec 86)

Word 3.01 fixes many of the bugs of the justly maligned 3.0. Still, it's the most feature-laden word processor around. Also has Microsoft's somewhat unusual view of what the Mac interface is. Esoteric command key combinations. Requires 512K+. $395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073. NCP (Mar 88)

WorksPlus Spell is a speedy spelling and hyphenation checker for *Microsoft Works*. It includes a glossary for abbreviations and time/date stamping. The biggest drawback is its limitation to one program. $59.95. Lundeen & Associates. PO Box 30038, Oakland, CA 94604. NCP (Oct 87)

Write is a "beginner's" version of *Word* 3.0. More features than some word processors in its class, but not all of the features work well. Poor value, and expensive upgrade path to *Word*. $175. Requires 512K+. Microsoft, 16011 NE 36th Way, Box 97017, Redmond, WA 98073-9717. NCP (May 88)

WriteNow for the Macintosh has many of the features of *MacWrite* and then some, including the ability to work in columns. Has built-in spelling checker with 50,000-word dictionary. $175. T/Maker, 1973 Landings Dr., Mountain View, CA 94043. NCP (Mar 87)

SYSTEM SOFTWARE

HyperCard is a totally unique program for the Mac. It uses an index card metaphor. It contains a programming language, HyperTalk. Requires 1M+. Free with new Macs, otherwise $49.95. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Dec 87)

System Tools 5.0 is the Apple System upgrade for Mac Plus, SE, and II owners. It contains *MultiFinder* (a multitasking environment), a LaserWriter spooler, and a Control Panel resource to add color on the Mac II desktop. Takes 1M+. $49. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Mar 88)

ORGANIZATIONAL TOOLS

Acta is an outline processor in desk accessory format. It has practically all the power of a standalone program, and then some. Can save files as *Acta* outlines, *MacWrite* or text files. $59.95. Symmetry, 761 E. University Dr., Mesa, AZ 85203. NCP (Jul 86)

Business Class is a *HyperCard* stack that contains world travel information and itinerary planning. Uses maps to locate countries of interest, but it lacks United States domestic travel information. Requires 1M+ and *HyperCard*. $49.95. Activision, 2350 Bayshore Pkwy., Mountain View, CA 94043. NCP (Mar 88)

Calliope is a new type of outlining program. Chunks of information are manipulated as small "light bulbs" containing text. Related elements can be graphically connected, and their text information viewed in hierarchical order. Text files can be created for *MacWrite* editing. $99. Innovision, PO Box 1317, Los Altos, CA 94023. NCP (Sep 86)

Comment (previously known as *Memorandum*) is the electronic equivalent of Post-it Notes. Notes can be attached to many different types of documents. Doesn't work well with *SuperPaint* or *Microsoft Works*. An alarm clock feature alerts users of Timed Notes. $99.95. Deneba Systems, 14206 SW 136th St., Miami, FL 33186. NCP (Nov 87)

DecisionMap organizes data to facilitate decision making. Unique weighting abilities make this a powerful tool. The decision analysis process is long and sometimes complex, but never difficult. $145. SoftStyle, 7192 Kalanianole Hwy., Honolulu, HI 96825. CP

Design is a powerful organizational tool. It goes beyond mere flowcharting. Complex, detailed program aimed at software pros. $250. Meta Software, 150 CambridgePark Dr., Cambridge, MA 02140. NCP (Apr 87)

FlowMaster charts your ad dollars in print, TV, billboard, and other mediums. Analyzes cost/benefit of a campaign in terms that even jaded Mad. Ave. execs will find innovative. Includes bar-chart and tabular output. Requires 512K+. $495. Select Micro Systems, 40 Triangle Ctr., Yorktown Heights, NY 10598. NCP (Jan 88)

Focal Point is a *HyperCard* stack that ties together a calendar, phone log, client accounts, and more in one easy-to-use organizational tool. Requires 1M+ and *HyperCard*. $99.95. Activision, 2350 Bayshore Pkwy., Mountain View, CA 94043. NCP (Mar 88)

MINIFINDERS

Guide allows you to "cross reference" from within a document ♦♦♦♦½ using hypertext. You can set up words or sections of the document so that double-clicking brings up explanatory material, graphics, and other useful items. The word processing and formatting functions, however, are limited. $135. OWL International, 14218 NE 21st St., Bellevue, WA 98007. NCP (Apr 87)

Instant Expert is an excellent way to learn the mechanics of creating ♦♦♦½ an expert system. The inference engine (that ultimately finds the answer) is visible. Lacks a true Mac interface. Version 1.0. $49.95. Human Intellect Systems, 1670 S. Amphlett Blvd., Suite 326, San Mateo, CA 94402. NCP (Jan 88)

MacProject allows a user to plan and track a project from beginning ♦♦♦ to end. Uses CPM to produce schedules with start and finish dates for each task. Can report on resource interdependencies and generate all needed printed reports. $195. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Mar 86)

MacSMARTS can create small standalone expert systems. Fea- ♦♦♦ tures hypertext connections to Paint, PICT, SYLK, and text files. Still a little buggy. Requires 512K+. Version 1.03. $149.95. Cognition Technology, 55 Wheeler St., Cambridge, MA 02138. NCP (Jan 88)

Micro Planner Plus is a great project management system. Out- ♦♦♦♦½ standing analysis capability. Memory based, making it much faster than the original. Includes a font menu. Even saves reports out in *MacDraw* format for further work. Uses standard print drivers. HFS compatible. $495. Micro Planning International, 235 Montgomery St., San Francisco, CA 94104. NCP (Dec 86)

MORE is an incredibly powerful outline processor with gobs of great ♦♦♦♦♦ features: instant charts, math capabilities, multiple windows, font and style control, templates, and more. Prints outlines in any of several standard formats, even in color. Requires 512K+. $295. Living Videotext, 117 Easy St., Mountain View, CA 94043. NCP (Jan 87)

PowerPoint is a comprehensive presentation creation tool. Han- ♦♦♦♦ dles 35mm slide and overhead transparency formats. Good graphics and text editing capabilities. Requires 512K+. $395. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (Aug 87)

ThinkTank 512 is a very fast and intuitive organizational tool. Full ♦♦♦ keyboard control is possible. Can store and paste graphics into outlines. Slide show feature allows high-quality presentations to be created. Good report formatting and printing capability. $195. Living Videotext, 117 Easy St., Mountain View, CA 94043. CP (Jan 86)

DESK MANAGERS

Executive Office is a jack of all trades office application. Good ♦♦♦½ database, word processing, graphics, and minispreadsheet. Available on 400 or 800K disks; get the 800 if you can. $249.99. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Mar 87)

Front Desk lets small businesses and offices easily keep track ♦♦♦ of personnel schedules, activities, and payments. The program can keep track of up to 15 employees, functioning as a day-, week-, and month-at-a-glance calendar.

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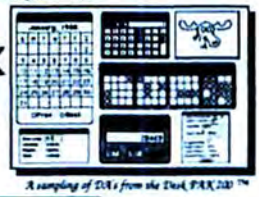


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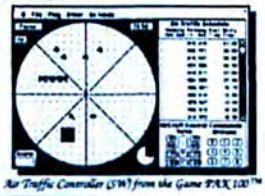


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MINIFINDERS



$149.95. Layered, 529 Main St., Boston, MA 02129. NCP (Dec 85)

MockPackage+ is a set of extremely powerful DAs. Includes a text editor, text printer (supports LaserWriter), charter, terminal, and EZmenus. HFS compatible. $35. CE Software, 801-73rd St., Des Moines, IA 50312. NCP (Mar 87)

My Office lets you handle your files and papers in much the same way you did before you got a computer. Excellent use of graphic symbols. $129.95. DataPak, 14011 Ventura Blvd., Sherman Oaks, CA 91423. CP (Prem)

Quickset is a set of desk management and organizational tools that can be used as desk accessories or applications. Functions include note filer, card filer, calendar, phone dialer, financial, and statistical calculators, and a file encryptor. $49.95. EnterSet, 2380 Ellsworth, Berkeley, CA 94720. NCP (Dec 85)

SideKick 2.0 beefs up original *SideKick* DAs and adds two major new ones — *MacPlan*, (formerly *Click-On Worksheet*) and *Outlook*, a full-featured outliner. Also comes with seven applications to support the desk accessories. $99.95. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Jun 87)

Smart Alarms is the best reminder system for the Mac. Easy to use, versatile and, well, smart. This self-running DA automatically reminds you of anything you enter into its Reminder file, giving you a wide range of useful advance warning options. $49.95. Imagine Software, 19 Bolinas Rd., Fairfax, CA 94930. NCP (Oct 86)

Top Desk is a set of 7 self-installing (and self-removing) DAs. *Menu Key* adds Command key sequences to programs; *View* allows looking at and moving data between up to 8 *MacWrite* documents; also included are *BackPrint, Touch 'n' Go, Blank, Encrypt*, and *Launch*. $59.95. Cortland Computer, PO Box 9916, Berkeley, CA 94709. NCP (May 86)

UTILITIES

Accessory Pak 1 is a set of useful applications and utilities. *Paint Cutter* alone is worth the price. That program allows users to browse and manipulate full page *MacPaint* documents. $39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. NCP (Nov 85)

AutoSave DA is insurance against system crashes. It saves your work automatically at intervals from 1 to 99 minutes. Compatible with many applications, but not recommended for use with databases. $49.95. Magic Software, 1706 Galvin Rd. S., Bellevue, NE 68005. NCP (Jan 88)

Colorizer adds pigments to the desktop and black and white applications. Also colors PICT graphics. System resources include saving and printing color screens. A useful novelty that'll run its course as developers add color to apps. Requires Mac II. $49.95. Palomar Software, PO Box 2635, Vista, CA 92083. NCP (Jan 88)

Copy II Mac does efficient sector and bit copies and in its latest version can back up virtually all Mac software. Features graphic displays of copy progress. Comes with *MacTools*, a multi-use utility that can recover many damaged files. $39.95. Central Point Software, 9700 SW Capitol Highway, Portland, OR 97219. NCP (Apr 86)

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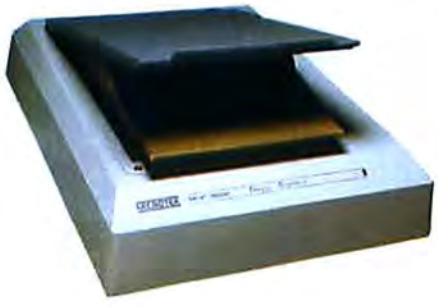
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MINIFINDERS



DiskExpress unfragments disk volumes by reorganizing data into ★★★★ continuous sectors and arranging files to slow down further fragmentation. Works with *MacServe*, floppy drives, and most hard drives. Requires 512K+. $39.95. ALSoft, Box 927, Spring, TX 77383. NCP (Feb 87)

DiskFit is a utility for backing up and restoring hard disk files. Cre- ★★★★½ ates a "SmartSet" of floppy disks so incremental backups only update files modified since the last backup procedure. Backs up to floppies or another hard disk. Requires 512K+. $74.95. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (Jun 87)

DiskQuick is an easy-to-use cataloging program. Criteria selection ★★★★ option for generating subcatalogs. Requires 512K+. $49.95. Ideaforms, PO Box 1540, Fairfield, IA 52556. NCP (Apr 87)

Disk Ranger is a speedy cataloging program that doubles as an ★★★★ efficient labelmaker. Comes with pinfeed labels. Works with regular and hard disks. Can catalog HFS systems. $34.95. Graham Software, 8609 Ingalls Circle, Arvada, CO 80003. NCP (Mar 86)

DiskTop is a desk accessory *Finder* replacement of extraordinary ★★★★½ power and ease of use. Comes with the useful *LaserStatus* DA and *Widgets* application. The extras alone are worth the price. Requires 512K+. Upgrade from version 1.0, $7; $10 with new manual. $49.95. CE Software, 801-73rd St., Des Moines, IA 50312. NCP (Aug 87)

DiskTools Plus is a set of 8 useful DAs and applications. Earlier ★★★★★ version was sold as *Battery Pak*. The DA *Disk Tools II* is a *Finder* replacement. Also included are an RPN calculator, *Phone Pad*, and *Calendar Manager*. Requires 512K+. $49.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Mar 88)

Dubl-Click Calculator Construction Set lets users design personal- ★★★★½ ized calculators with a variety of standard and special functions. Finished calculators can be saved as installable desk accessories or as clickable applications. $59. Dubl-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Apr 86)

Easy Checks puts your check register (or credit card records or any ★★ other simple financial account) into a desk accessory. Creating formats is rough, can't save reports to disk and there's no LaserWriter support. Requires 512K+. $44.95. PAR Software, PO Box 1089, Vancouver, WA 98666. NCP (Apr 88)

Eureka: The Solver is a free-form numerical equation solver. Stand- ★★★ ard trigonometric and logarithmic functions are available as is treatment of imaginary and complex numbers. $195. Borland International, 4585 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Mar 88)

Fastback for the Macintosh is hard disk back-up software that is ★★★ very quick if not very efficient. Doesn't automatically exclude applications. Creates a seperate catalog disk. $99.95. Fifth Generation Systems, 1322 Bell Ave., Tustin, CA 92680. NCP (Apr 88)

Fedit Plus is the file and disk editor for everyone, from newest Mac ★★★★★ owner to oldest. It can do more for your disks and files than any other application. Can recover deleted MFS files. If you own a Mac, get it. HFS-compatible. $49.95. MacMaster Systems, 108 E. Fremont Ave., #37, Sunnyvale, CA 94087. NCP (Sep 86)

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MINIFINDERS

Findswell is an indispensible utility that installs a new button in the ★★★★★ Open Dialog box of virtually every Macintosh application. Press the button, type a search string, press Find and *Findswell* searches for any files that match. Click Open or double-click to open the correct file. Requires 512K+. $49.95. Working Software, 321 Alvarado, Monterey, CA 93940. NCP (Nov 87)

FlashBack is a utility to back up HFS hard disks onto floppies. A ★★★ unique graphic display of the HFS directory facilitates file selection. The program can handle files larger than 800K. $59.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Nov 86)

Font/DA Juggler Plus gives you unlimited access to almost any ★★★★ number of fonts, desk accessories, and sounds. Uses hierarchical menus. $59.95. Alsoft, PO Box 927, Spring, TX 77383. NCP (May 88)

Glue adds a print-to-disk capability to many programs. *ImageSaver* ★★★★½ installs as printer driver; *Viewer* allows copying and printing of *Glue* files. Handy utility for desktop publishers. $59.95. Solutions International, Box 989, Montpelier, VT 05602. NCP (Dec 86)

Hard Disk Util uses patch files to allow users to mount and run ★★★★½ specified programs on their hard disks. The list of patches is constantly expanding. $89.95. FWB Software, 2040 Polk St., San Francisco, CA 94109. NCP

HFS Backup ranks as one of the preferred hard disk backup utilities. ★★★★½ Back up by file/folder or last changes. Backup specifications can be saved as templates. Good graphic interface. Reliable program. $49.95. PCPC, 4710 Eisenhower Blvd., Tampa, FL 33634. NCP (Dec 86)

HFS Locator Plus is *the* essential HFS desk accessory. It can ★★★★ search for a file by name or date of creation, create folders, move files from one folder to another, set a program to launch while in an application. $39.95. PBI Software, 1163 Triton Dr., Foster City, CA 94404. NCP (Sep 86)

HyperDA lets you browse through *HyperCard* stacks through a desk ★★★★★ accessory. A true equalizer for 512K Mac owners who cannot normally access stackware. Requires 512K+. $69. Symmetry, 761 E. University Dr., Mesa, AZ 85203. NCP (May 88)

Icon-It! (v. 1.0) lets you create icons to use as an alternative to ★★★★½ menu commands. Comes with 47 icon templates or you can create your own. $79.95. Olduvai Software, 7520 Red Rd., South Miami, FL 33143. NCP (Feb 88)

LabView automates the repetitive task of controlling laboratory ★★½ instruments. Rich icon-based language allows flow chart-type programming, but response is slow. Requires 512K+. $1995. National Instruments, 12109 Technology Blvd., Austin, TX 78727. NCP (Aug 87)

LaserServe is a printer spooler for AppleTalk networks. After instal- ★★★★★ lation all operations done via a desk accessory. Works with both *MacServe* and *TOPS*. Requires 512K+ and 800K drive or hard disk. $95 per node. Infosphere, 4730 SW Macadam Ave., Portland, OR 97201. NCP (Feb 87)

Mac Disk Catalog II is a utility that will quickly organize a mod- ★★★★ erate size disk library. Easy to use with powerful reporting and label-making features. $49.95. New Canaan Micro-Code, 136 Beech Rd., New Canaan, CT 06840. NCP (Dec 85)

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MacFlow is a design tool created for programmers. Traditional flow-
★★★½ charting symbols are linked together, and a symbol can be connected to a separate flowchart file. Symbols can't be edited, precluding using *MacFlow* for other applications. $125. Mainstay, 5211-B Derry Ave., Agoura Hills, CA 91301. NCP (Apr 87)

MacInUse tracks time spent in applications and saves info as text
★★★★★ files. Installs on any disk, works in background. MFS, HFS compatible. Extremely valuable for tax purposes, client records, etc. $79. SoftView, 4820 Adohr Lane, Camarillo, CA 93010. NCP (Jan 87)

MacLabeler lets users instantly index and print labels for all the
★★★½ disks in a burgeoning collection. Choose border type and orientation of your label; index by folder or document. Starter set of labels is included. $49.95. Ideaform, PO Box 1540, Fairfield, IA 52556. NCP (Prem)

MacNosy is a global disassembler. A very advanced user can
★★★★★ use this program to look into the code of virtually any program. This advanced tool can take you places no other Mac program could dream of going IF you have the skill to guide it. The documentation is sparse. For pros only. $90. Jasik Designs, 343 Trenton Way, Menlo Park, CA 94025. NCP

MacSafe is a data file security program that allows you to place
★★★★ multiple files into a "safe," and then you can further protect them through two types of encryption (including DES). Flexible and very easy to use. Allows for installation on hard disk. $149.95. Kent Marsh Ltd, 1200 Post Oak Blvd., Houston, TX 77056. CP (Mar 87)

MacServe converts a Mac and a hard disk into a disk and print
★★★★½ server. Uses the AppleTalk network and is easily hooked up. Users can partition the hard disk into multiple volumes. Runs in the background, so users can work on all machines in the network. $250. Requires 512+. Infosphere, 4730 SW Macadam, Portland, OR 97201. CP

MacTree displays your files in the form of a hierarchical tree. Good
★★ idea, poor performance. Can't view tree easily. Good search function. Requires 512K+. $69.95. Software Research Technology, 22901 Mill Creek Dr., Laguna Hills, CA 92653. NCP (Apr 88)

MacZap is a three-part disk and memory utility. It can be used to
★★★★ recover some damaged files and disks, compare disks, analyze disk structure, and make back-up copies of most disks. $60. Micro Analyst, 2505 Roxmoor, Austin, TX 78723. NCP (Jan 86)

Menu Fonts displays the names of fonts in the actual font instead of
★★★ standard Chicago. Won't work with programs that have a nonstandard Font menu or no Font menu. Comes with *Lock-Out*, a utility that gives password access to your Mac, and *FastFormatter*, a utility for formatting multiple blank disks. Requires 512K+. $15. Beyond Software, 3865 N. Oracle Rd., Tucson, AZ 85705. NCP (Jul 87)

myDiskLabeler is an excellent label maker. It can read directories
★★★★ and use large or small icons or anything desired. Comes with 54 precut labels. $44.95; with color printing ability (on the ImageWriter II), $54.95; with PostScript font capability (on the LaserWriter), $64.95. Williams and Macias, PO Box 19206, Spokane, WA 99219. NCP (Aug 87)

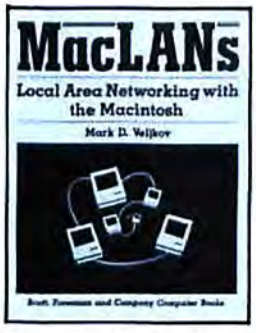
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Mac LANs: Local Area Networking with the Macintosh

by Mark D. Veljkov

More than just a guide to LANs products and the Macintosh, this compendium of tips, suggestions, and products will help you make better decisions as you improve on-line communication. Explaining how the Macintosh fits into the world of LANs, the book covers ■ The more technical aspects of LANs ■ How to set up a LAN including cable and software selection ■ LAN peripherals including add-on cards, bridges, and hard discs. You'll also find a through discussion of how to troubleshoot your network, as well as numerous illustrations. *Softbound 352 pages,* **$21.95**

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MINIFINDERS

'Ncryptor is a simple safe program that lets users password their ¢¢¢¢ files. The same program is used for encoding and decoding. This is one of the best products in its category. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

PackIt III is an essential utility. Primarily used to temporarily "glue" ¢¢¢¢½ files together, it can also compress and encrypt. Feeware. $10, $10 for printed manual. Harry R. Chesley, 1850 Union St., San Francisco, CA 94123. NCP (Jan 87)

PowerStation is an extremely easy to use, versatile and powerful ¢¢¢¢¢ *Finder* substitute. Loaded with power user features. Comes with *Pyro!* $59.95. Software Supply, 599 N. Mathilda Ave., Suite 210, Sunnyvale, CA 94086. NCP (Dec 87)

Printworks for the Mac is a comprehensive software-based dot- ¢¢¢¢ matrix printer control system. Optimizes printing from different applications, and is easy to use. Requires 512K+. $75. SoftStyle, 7192 Kalanianaole Hwy., Honolulu, HI 96825. NCP (Aug 87)

Programmer's On-line Companion puts an abridged version of ¢¢¢ *Inside Macintosh* in your system for reference. Simply read the text or transfer some or all of it directly into your normal editing window. Non-Macish interface makes the program confusing, somewhat difficult to use. $34.95. Addison-Wesley, Route 128, Reading, MA 01867. NCP (Jul 87)

Quick & Dirty Utilities, Volume One is a disk full of handy ¢¢¢¢½ programs. Several desk accessories include a menu bar clock and a terminal emulator. $39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP (Nov 85)

QuicKeys lets you make full use of your keyboard. Assign any com- ¢¢¢¢ mand (menu choices, DAs, etc.) or series of text blocks and/or command to any key or key combination. Enormously powerful; necessary for Apple Extended Keyboard owners. Requires 512K+. $99.95. CE Software, 801-73rd St., Des Moines, IA 50312. NCP (Jan 88)

RamSnap is a RAMdisk and disk cache in one easy-to-use ¢¢¢¢ package. Can store multiple configurations as files. Good product but a little pricey. $59.95. Dove Computer Corp., 1200 North 23rd St., Wilmington, NC 28405. NCP (Jun 87)

Read-It! (v. 1.0) is the best consumer value in optical character ¢¢¢¢ recognition software. Works with any scanner that saves images as a bit map, PICT or TIFF file. Comes with type tables that can be customized. Version 1.1, $395; ThunderScan version, $149.95. Olduvai Software, 7520 Red Rd., South Miami, FL 33143. NCP (Apr 88)

Sentinel encrypts data files (or sets of files) using a super-secure ¢¢¢¢ DES or a super-fast SuperCrypt algorithm. Provides high-level security if you can keep your passwords secret. Requires 1M+. $149.95. SuperMac, 295 N. Bernardo Ave., Mountain View, CA 94043. NCP (Apr 88)

SmartScrap and The Clipper are two useful desk accessory utili- ¢¢¢¢½ ties for graphics work. *SmartScrap* is a major enhancement to the standard Scrapbook DA. *The Clipper* provides you with a transparent Clipboard window, allowing you to resize or crop a graphic to the area that it will be pasted to. $59.95. Solutions International, PO Box 989, Montpelier, VT 05602. NCP (Jul 87)

New Turbo Trackball from Asher!



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Left or Right Hand Option	**Yes**	No	No
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*MTBF-Mean time between failure **MTTR-Mean time to repair

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ASHER ENGINEERING 15115 Ramona Blvd., Baldwin Park, CA 91706

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MINIFINDERS

SoundWave is a useful sound recording and editing utility. Works ★★★★ with waveforms; able to change sampling rates. Previously known as *SoundCap*. $199.95. Impulse, 6870 Shingle Creek Parkway, Minneapolis, MN 55430. NCP (Apr 88)

Stepping Out is a software virtual screen extender. Lets you create ★★★★★ a screen as large as memory allows. 9-inch screen is a "view" to larger screen. Also has reduction features. Amazing. $95. Berkeley System Design, 1708 Shattuck Ave., Berkeley, CA 94709. NCP (Mar 88)

Suitcase is a transparent program that automatically lets you use ★★★★★ all your fonts and DAs. Foolproof and indispensible. Comes with *Pyro!*, the best screen saver. Requires 512K+. $59.95. Software Supply, 599 N. Mathilda, Sunnyvale, CA 94086. NCP (Nov 87)

SuperLaserSpool is a LaserWriter spooler. Very fast because it ★★★★ does conversion to PostScript in the background, but doesn't print a faithful rendition of *PageMaker* documents as a result. $149.95 single user, $395.95 for up to five users on one network. SuperMac Software, 950 N. Rengstorff Ave., Mountain View, CA 94043. NCP (Jun 87)

Switcher is Andy Hertzfeld's contribution to Mac productivity. This ★★★★★ program lets users run several programs at once (up to 8 on a 1-megabyte or larger machine). Switching between the programs is nearly instantaneous. Requires 512K+. $19.95 from Apple, free from BBSs, included with some third-party applications. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Jun 86)

Tempo is a desk accessory that allows most Mac commands to be ★★★★ intelligently recorded and played back. Capabilities include pausing, conditional branching, and macros that work between applications. $99. Affinity Micro Systems, 1050 Walnut St., Boulder, CO 80302. NCP (Jul 86)

TMON is *the* debugger for the Mac. This isn't open to question. ★★★★★ *TMON* is simply the best. Comes with the latest version of Darin Adler's Extended User Area. $149. ICOM Simulations, 626 Wheeling Rd., Wheeling, IL 60090. NCP

Turbo Download is a desk accessory designed specifically to in- ★★★★½ crease the speed of Xmodem data transfers from national databases to your Mac. Speed increases range upward from 50% to over 300% at 2400 baud. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

Twelve-C Financial Desk Accessory brings all the power and ★★★★ functionality of a Hewlett-Packard 12C programmable calculator to your desktop. Can be programmed and all registers can be viewed while calculator is running. $39.95. Dreams of the Phoenix, PO Box 10273, Jacksonville, FL 32247. NCP

TypeNow is a desk accessory that allows the Mac and ImageWriter ★★★★ to function as an electronic typewriter. Type can be placed into blanks in complex forms easily. Typing can be recorded and played back. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jan 86)

WorksPlus Command lets you build and define macros for all ★★★★ *Works* modules. Predefined macros provide for an even tighter integration of program's word-processing, spreadsheet, and database modules. Requires 1M+. $99.95. Lundeen & Associates, PO Box 30038, Oakland, CA 940604. NCP (May 88)

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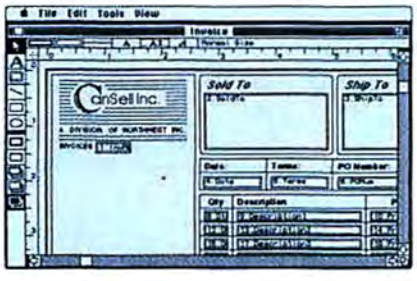
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MINIFINDERS

LANGUAGES

AAIS Prolog is a fast standard Prolog with excellent debugging and error handling. Good for serious program development. Documentation is not as good as the program. $150. Advanced AI Systems, PO Box 39-0360, Mountain View, CA 94039-0360. NCP (Mar 87)

Aztec C is a C language that will appeal to users with a UNIX background. It uses many UNIX conventions and in the more expensive versions comes with standard UNIX utilities, including the VI editor. $75 beginners, $199 basic system, $299 development system, $499 commercial system. Manx Software Systems, PO Box 55, Shrewsbury, NJ 07701. NCP (May 86)

Basic Compiler is the long awaited compiler for *Microsoft BASIC*. The interface is unfriendly, but it gets the job done. Compiled programs run faster, but you can still tell they are written in BASIC. $195. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP (May 87)

ExperCommon Lisp is a LISP development system. Not fully Common LISP compatible, but creates good compiled code and standalone applications. Requires 1M+. $995. ExperTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. NCP (Aug 87)

ExperLISP is a useful programming language for high-level programmers. The more you use it, the more you'll figure out about it. $495. Requires 512K+. ExperTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. CP

ExperLogo is a version of the popular teaching language, Logo. Features three-dimensional graphics using "bunnies" rather than usual "turtles." Very speedy, smooth program. Comes with an excellent manual. $149.95. ExperTelligence, 559 San Ysidro Rd., Santa Barbara, CA 93108. CP

ExperProlog II is a Prolog based on the new Prolog II standard. Has the ability to handle infinite trees and allows user-defined functions that operate conditionally. Documentation is not the best and Mac interface is nonstandard. $495. ExperTelligence, 559 San Ysidro Blvd., Santa Barbara, CA 33108. NCP (Mar 87)

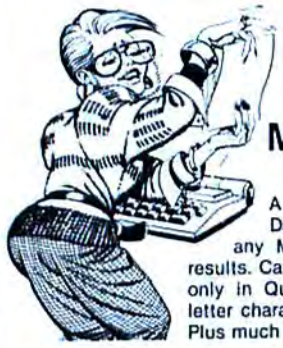
Lightspeed C provides an integrated environment for developing desk accessories, applications, and code resources in C. The editor works with the compiler for searches and file management. Can get awkward if you need something outside the environment. $175. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (Apr 87)

Lightspeed Pascal is a fast, powerful development system for Pascal programming. Fully integrated Mac-like environment. Requires 512K+. $125. Think Technologies, 135 South Rd., Bedford, MA 01730. NCP (Feb 87)

LPA MacProlog (v. 2.0) is a much improved program that includes incremental and optimizing compilers, a graphics environment package, and C and Pascal submodules. Requires 1M+. $495. Programming Logic Systems, 31 Crescent Dr., Milford, CT 06460. NCP (Feb 88)

MacAsm is a software development system that allows programs to be written in assembly language. Programmers can assemble, edit, and test software, and an integrated resource compiler lets independent applications run from their own

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icons. $125. Mainstay, 5311-B Derry Rd., Agoura Hills, CA 91301. NCP

Mac C is a good, highly Mac-oriented implementation of this popu- ¢¢¢¢ lar development language. Assembler and linker included. $425. Consulair, 140 Campo Dr., Portola Valley, CA 94025. NCP

MacExpress is a development environment or shell. Programmers ¢¢¢ use it to save time and effort when developing standalone applications for the Mac. $195. ALSoft, PO Box 927, Spring, TX 77383. NCP (Feb 86)

MacForth Plus is an excellent implementation of the popular Forth ¢¢¢¢ programming language. New, reduced price, $199. Creative Solutions, 4701 Randolph Rd., Rockville, MD 20852. NCP

Mach II is a multitasking implementation of Forth that allows local ¢¢¢¢ variables and text files. Can create standalone applications. Several windows can be up with different operations in each, operating concurrently. Execution is fast. $99.95. Requires 512K+. Palo Alto Shipping, PO Box 7430, Menlo Park, CA 94026. NCP (Apr 86)

Macintosh 68000 Development System is a fairly traditional as- ¢¢¢¢ sembly language package. The two-disk set provides an editor (*Edit*), an assembler, a linker, an executive, and a resource compiler. $195. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP

Macintosh Pascal is Apple Computer's version of this very popular ¢¢¢ programming language. Loaded as it is with innovative teaching features, this interpreter is an excellent introduction to Pascal. $125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. CP

MacScheme is a LISP dialect with "artificial intelligence" capabili- ¢¢¢ ties. Has a large appetite for RAM. Interpreted language with Toolbox access limited to a small part of QuickDraw. $125. Semantic Microsystems, 4470 S.W. Hall St., Beaverton, OR 97005. NCP (Jun 86)

MacScheme+Toolsmith is a Mac version of Scheme, a LISP dia- ¢¢¢¢¢ lect. Beautiful implementation, marred only by relative slowness compared to similar products. Get *Toolsmith*. Requires 1M+. $395. Semantic Microsystems, 4470 S. W. Hall, Beaverton, OR 97005. NCP (Aug 87)

Megamax C is an easy to use, full version of C. Has a compiler, ¢¢¢¢ linker, disassembler, editor, and much more. Good for beginners. Excellent documentation. $299.95. Megamax, PO Box 851521, Richardson, TX 75085. NCP

Microsoft BASIC was the Mac's first programming language. This ¢¢¢¢ interpreter (it's not a compiler) now supports the Toolbox and the whole Mac interface can be implemented in your programs. For nonprogrammers there are lots of programs available. $99. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. NCP

MIDIBasic is a library of simple, but highly useful routines for writing ¢¢¢¢ MIDI software. Good stuff. Sketchy documentation. Works with both *Microsoft* and *ZBasic*. Requires 512K+ plus BASIC. $49.95. Altech Systems, 831 Kings Highway, Shreveport, LA 71119. NCP (Aug 87)

Object Logo is an object-oriented programming language with ¢¢¢¢ access to the Toolbox. Good product, but can't produce standalone applications. Requires 512K+. $79.95. Coral Software, PO Box 307, Cambridge, MA 02142. NCP (Aug 87)

Personal Prolog is an inexpensive and well-documented program. ¢¢¢¢ Has no debugging or search and replace facilities, making it a more appropriate tool for learning than development. Documentation and use of Mac interface are excellent. $64.95. Optimized Systems Software, 1221 B Kentwood Ave., San Jose, CA 95129. NCP (Mar 87)

Prolog/m is a solid Prolog following the Edinburgh standard. Has ¢¢¢¢ extensive debugging facilities, but you'll need separate *Toolbox* disk with 58 additional predicates. Drawback: no true editing or printing facilities. $99.95. Chalcedony Software, 5580 La Jolla Blvd., La Jolla, CA 92037. NCP (Mar 87)

QUED (Quality Editor for Developers) is the ultimate source code ¢¢¢¢ editor. Loaded with useful and well thought out features, it will make any programmer's life much easier. It is not a word processor, however. $65. Paragon Concepts, 4954 Sun Valley Rd., Del Mar, CA 92014. NCP (Mar 86)

TML Data Base Toolkit is an ISAM type database that provides fast ¢¢¢¢ and efficient administration of large data files in applications developed with *TML* compiler. Supports multiple open index files. $89.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Dec 86)

TML (MacLanguage Series) Pascal is a good Pascal compiler, ¢¢¢¢¢ capable of producing standalone programs. Can use most existing Lisa Pascal programs with only slight modification. Requires 512K+. $99.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Jun 86)

TML Source Code Library shows how to write programs that use ¢¢¢¢½ custom definition routines, speech, serial drivers, split bars, and other topics. Provided on three 400K diskettes. Requires *TML Pascal*. $79.95. TML Systems, 4241 Bay Meadows Rd., Jacksonville, FL 32217. NCP (Dec 86)

Visual Interactive Programming is a unique visual programming ¢¢¢¢ system for creating simple Macintosh applications. Programs are constructed in a flowchart-type manner. Easy access to most toolbox routines. Poor printing control. $124.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jun 87)

ZBasic is a fast, interactive compiler capable of creating standalone ¢¢¢¢ applications that take advantage of Mac's unique features and abilities. Includes *Edit, RMaker* and *MacInTalk*. Requires 512K+. $89.95. Zedcor, 4500 E. Speedway Blvd., Tucson, AZ 85712. NCP (Dec 86)

EDUCATION

Alphabet Blocks teaches prereaders the letters and sounds of the ¢¢¢¢¢ alphabet. The digitized voice of an on-screen elf is clear and pleasant. Very intuitive. Requires 1M+. $49.95. Bright Star Technology, 1003 111th Ave., Bellevue, WA 98004. NCP (May 88)

American Discovery is an interactive United States geography ¢¢¢ game that teaches states; capitals; and, in a roundabout manner, postal codes. Suffers from small maps. Requires 512K+. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP(May 88)

Business Simulator is a training tool in a simulation game. Make ¢¢¢¢ decisions that manage the company through several stages over 25 years. Decisions become more difficult over time. Requires 1M+, 2 disk drives (one must be 800K). May be run from a hard disk. $69.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. NCP (Dec 87)

ChipWits is a combination game and teaching tool. Players create ¢¢¢½ programs to maneuver robots through a set of 8 mazes. The programs are written in *ChipWit*'s built-in icon-based programming language (IBOL). $49.95. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP

Course Builder (version 2.0) creates standalone educational appli- ¢¢¢¢ cations. An easy-to-learn dedicated programming language uses blocks and arrows. Graphics, animation and sound can be integrated. Version 2 allows mathematical calculations. Poor documentation. $395, plus $10 shipping. TeleRobotics International, 8410 Oak Ridge Highway, Knoxville, TN 37931. NCP (Oct 87)

HyperTutor is a stack that teaches HyperTalk, *Hypercard*'s pro- ¢¢¢¢½ gramming language. Uses an interactive Test Mac on each card to write scripts. A variety of windows makes it good for both beginners and advanced programmers. $49.95. Teli-

MINIFINDERS



graphics, 936 Sir Francis Drake Blvd., Kentfield, CA 94904. NCP (Apr 88)

KidsTime is a package of five quality educational programs for ★★★★ children between the ages of 3 and 12. The programs all have adjustable difficulty levels. Some use speech and one is a nice introduction to musical notes. Sparse documentation. $49.95. Great Wave, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Oct 86)

LearnWord 3.0 is a three-part series of cassette tape/diskette ★★★½ modules that explain the intricacies of *Word* 3.0. They do the job, but remind you why cutting classes was more fun. $49.95 per module. Personal Training Systems, PO Box 54240, San Jose, CA 95154. (Apr 88)

LXR•Test generates tests from a database of questions. Makes it ★★★★ easy to modify and scramble test questions. Flexible output. Requires Mac 512E+, two 800K drives, or a hard-disk drive. $199 or $399, depending on features. Logic eXtension Resources, 9651 Business Center Dr., Rancho Cucamonga, CA 91730. NCP (May 88)

MacEdge and **MacEdge II** each contain 8 reading or math drill ★★★ programs for basic skills. Programs follow one of three formats, a bit contrived. Contrivances are design flaws. $49.95 each. Think Educational Software, 16 Market St., Potsdam, NY 13676. CP

MacType offers structured typing instruction. Can teach both ★★★★ standard and Dvorak keyboards. Features include certificates for reaching certain levels. Can be used in a multistudent environment. $49.95. Palantir Software, 12777 Jones Rd., Houston, TX 77070. CP

MasterType is proof that learning to type can be fun. In this arcade- ★★★ style action game words descend from four corners towards the center ship; the user must type them correctly. Features 18 skill levels, tracks errors, recommends lessons and provides comparison scores. $49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP

Sensei Physics is a capable, intelligent, well-designed study aid. ★★★★½ Covers Vectors to Thermodynamics to The Nature of Light. Animated experiments let you try out concepts. Requires 512K+. $99.95. Broderbund Software, 17 Paul Dr., San Rafael, CA 94903. CP (Jan 88)

Subli-Mac is a self-hypnosis program, combining subliminal, relax- ★★½ ation, and positive-self-image techniques. Flashes a brief user-written message (against a diversionary pattern) at your subconscious. Dangerous near hard disks. Manual suffers from terminal California-ese. $39.95. Psy-Den, PO Box 248, Champlain, NY 12919. NCP (Jan 88)

ENTERTAINMENT

A Mind Forever Voyaging is a departure in text adventure games. It ★★★ has a more extensive vocabulary and a more involved story than most of the genre. The story here is gripping, but there are only a few puzzles to solve. Requires 512K+. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Apr 86)

Alter Ego simulates the entire lifetime of a fictional character. The ★★★★ player's reaction to each multiple-choice event shapes the character's future relationships, job, health, etc. Spectacular the first time you play; after that there are too many similarities to previous characters. $59.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (Jun 86)

The Ancient Art of War gives users a chance to refight some ★★★★½ famous campaigns on both strategic and tactical levels. Campaigns can also be designed from scratch. Very playable, addicting game. Requires 512K+ Mac. $44.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Apr 86)

Archon pits the forces of Light against Dark in a quest to gain control ★★★★½ of five Power Points on a checkerboard grid. The shifting cycles of squares' colors keep the balance of power ever-changing. One or two players. $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Oct 86)

Balance of Power is the world's first computer peacegame. This ★★★★★ simulation allows players to become either the President of the United States or General Secretary of the Soviet Union. Extraordinary artificial intelligence routines and general play make this a classic. $49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60022. CP (Prem)

Battle Stations is a deceptively simple game based on the pen and ★★★★ paper game of *Battleship*. Requires strategy on several levels. Makes excellent use of Mac sound and graphics. Fun, casual game, especially when the Mac is one of the players. Requires 512K+. $30. Timeline, PO Box 60, Ypsilanti, MI 48197. NCP (Jun 87)

Beyond Zork is yet another installment in the famous *Zork* series of ★★★★½ text adventures. Find the fabled Coconut of Quendor to restore failing magic in this expert-level game. On-Screen mapping and the Mac's window environment are taken advantage of. $49.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Apr 88)

Borrowed Time casts players as detectives who have to solve their ★★★★ own murder — before it happens. This game requires players to think and act like a detective to solve the game. Good sentence parser, sketchy Mac interface. $44.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (May 86)

Bridge 4.0 provides three other players and the cards for a game of ★½ rubber bridge. It's an average (Goren) bidder and a less than good card player. Good if it's the only game in town. Plays slowly since it's written in BASIC. $29.95. Artworx Software, 150 N. Main St., Fairport, NY 14450. CP (Sep 86)

Bureaucracy is a paranoiac text adventure that dares you to move ★★★½ to a new house and job and still maintain some degree of sanity, not to mention a low blood pressure. Written by Douglas Adams of *Hitchhiker's* fame. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Aug 87)

The Chessmaster 2000 is a masterful chess program that will ★★★★★ appeal to both novice and master. You can view the board from 2- or 3-D perspective and turn the board for a better look. Play is smooth and easy, and the program responds by voice. You may get tired of hearing "Gotcha," though. $39.95. The Software Toolworks, 13557 Ventura Blvd., Sherman Oaks, CA 91423. CP (Jul 87)

Crystal Quest combines all the good elements of nearly every video ★★★★½ game ever made. Move a piece around to gobble up points and crystals. Shoot the nasties and get through the goal before they get you. Excellent sound effects. In color on the Mac II. Requires 512K+. Greene, 15 Via Chualar, Monterey, CA 93940. CP (Apr 88)

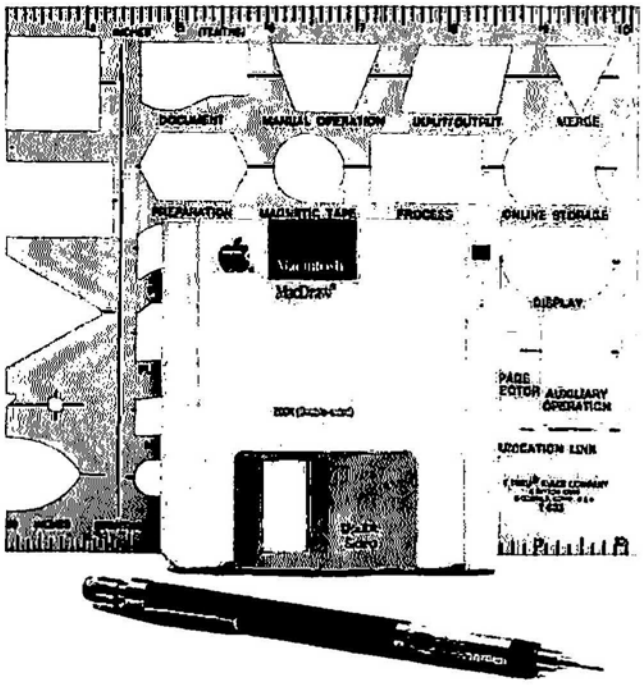
Dark Castle is an outstanding achievement in action games which ★★★★★ integrates RealSound with superb animation and graphics. You'll need better-than-average hand/eye coordination, but it's well worth the effort. Requires 512K+. $39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. NCP (Apr 87)

Deja Vu: A Nightmare Comes True is a graphic adventure that ★★★★★ breaks new ground. Innovative use of the Mac interface in truly playable and exciting game. A great introduction to graphic adventure games. $49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP (Jan 86)

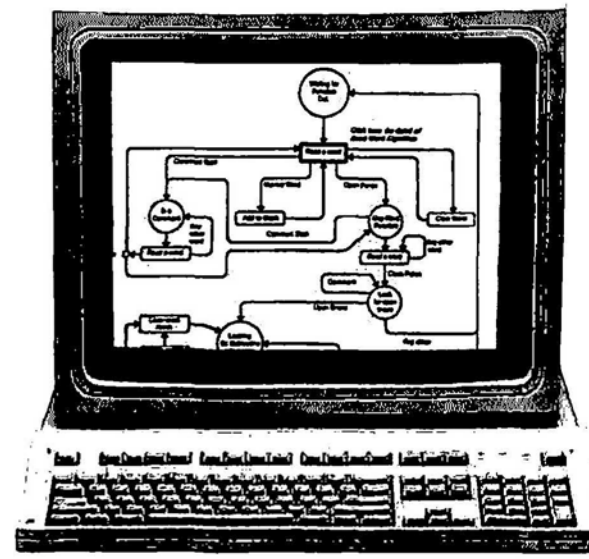
Dinner at Eight is a useful recipe filing system that includes a ★★★★ collection of recipes from a nationwide sampling of restaurants. Users enter number of diners and program scales recipes. $49.95. Rubicon, 2111 Dickson Dr., Austin, TX 78704. NCP (Jan 86)

Down Hill Racer is an action game with three skier personalities, ★★★★ four courses and four skill levels. There's something here for every player, no matter how bad or good. Full digitized sound

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(very nice!) $49.95. Miles Computing, 7741 Alabama Ave., Canoga Park, CA 91304. CP (Sep 87)

Enchanted Scepters is a surround sound graphic adventure game. ★★★★ It has a limited vocabulary and virtually no story. Offers extensive and varied scenes and utilizes the Mac interface to the fullest. $39.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. CP (May 86)

Falcon simulates an F-16 fighter jet with gut-tightening, sweat-★★★★½ making realism. Go against MiGs and dodge SAMs scenarios. Requires 1M+. $49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. NCP (May 88)

Ferrari Grand Prix is an exciting race car simulation game. Master-★★★★ ing it takes quite a bit of time and effort. Startup course and four other courses are built into the program. You can also design your own courses and backgrounds. Requires 512K+. $59.95. Bullseye Software, PO Drawer 7900, Incline Village, NV 89450. CP (Jul 87)

Flight Simulator puts you at the controls of a small plane (prop or ★★★★ jet) and lets you roam North America. As difficult as real flying. Mac version has features not found on earlier versions, including spotter aircraft. Not all features available on 128K. $49.95. Microsoft, 16011 NE 36th Way, Redmond, WA 98073-9717. CP (Nov 86)

Fokker Triplane is about as near to flying as you can get seated in ★★★★ front of a computer. Very realistic simulation and excellent graphics. Well-designed and implemented. $59.95. Bullseye Software, PO Drawer 7900, Incline Village, NV 89450. CP (Feb 86)

Gato puts players in command of an American submarine in World ★★★★½ War II. This superb simulation game uses all of the Mac's graphic capabilities to really make you feel that "you are there." $49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. CP (Nov 85)

Grand Slam is an absorbing and realistic tennis simulation game. ★★★★ Practice or play tournament against Mac-controlled players with different styles and abilities on four different surfaces. 512K or Mac Plus. $49.95. Infinity Software, 1331 61st St., Emeryville, CA 94608. CP (Nov 86)

Handwriting Analyst produces a personality profile base on an-★★★★½ swers to questions about one's handwriting. It's simple and the results will amaze and astound. $49.95. Ciasa, 2017 Cedar St., Berkeley, CA 94709. NCP (Apr 88)

HardBall is a baseball simulation game complete with umpire's ★★★★ calls and crowd sounds. Great graphics and a lot of fun for fans. $44.95. Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014. CP (Feb 87)

Hollywood Hijinx substitutes a modern Hollywood estate for the ★★★★ famous Underground Empire, but otherwise represents a return to *Zork* gameplay and feel. There's even a maze to navigate. Simplistic, but good. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Jun 87)

Klondike 3.3 is a version of solitaire that uses video game-like ★★★★★ scoring to create a superb, totally addictive game. Simple to play, nearly impossible to stop playing. Shareware: $10. Unison Software, 415 Clyde Ave., Mountain View, CA 94043. NCP (Dec 87)

Leather Goddesses of Phobos is another in the long line of witty ★★★★★ and entertaining Infocom text adventures. This one lets you choose your sex and comes with a 3D comic and a scratch 'n sniff card. It has three levels of play: tame, suggestive and lewd. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Feb 87)

Lode Runner is a 150-screen action-strategy challenge. Move ★★★★ around a grid of ladders and platforms collecting treasure; dig a hole to trap pursuers. Build your own challenges. $39.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP

MacCourses adds four very challenging new courses to *MacGolf.* ★★★½ Courses are swapped on the original *MacGolf* master disk two at a time. Nice add-on for a good game. Requires *MacGolf.* $34.95. Practical Computer Applications, 1305 Jefferson Hwy., Champlin, MN 55316. CP (Apr 87)

MacGolf is a dynamic simulation of real golf. Players have a choice ★★★★½ of courses and difficulty levels. Superb playability makes this a must for all golfers and gamers. Requires 512K+. $59.95. Practical Computer Applications, 1305 Jefferson Hwy., Champlin, MN 55316. CP (May 86)

MacMan is a two-part package. The software portion is a decent ★★★★★ *PacMan*-like game. The hardware part is a tiny converter that lets you use a joystick with a Mac or Mac Plus. $39.95. Nuvo Systems, 225 Tank Farm Rd., San Luis Obispo, CA 93401. CP (Aug 87)

Mac Pro Football is a terrific sports simulation that gives you the ★★★★ chance to pit any combination of 38 Super Bowl teams against each other and direct team play. It comes with excellent, detailed (and necessary) documentation. Play selection can get a bit Byzantine. $49.95. Avalon Hill, 4517 Harford Rd., Baltimore, MD 21214. CP (Mar 87)

MacRacquetball uses digitized videos and sounds of professional ★★★½ players for a realistic simulation. Has lots of control settings and can be played against someone else over a modem or between hard-wired Macs. Turn off hard disks before playing. $59.95. Practical Computer Applications, 1305 Jefferson Hwy., Champlin, MN 55316. CP (Oct 87)

Maze Survival challenges players to destroy maze walls before roving ★★½ bugs squash themselves against it. Bugs lay eggs to spawn a new generation. Repetitive. $34.95. Olduvai Software, 7520A Red Road, South Miami, FL 33143. NCP (Aug 87)

MazeWars+ is an interactive, multiplayer game to be played on ★★★★ AppleTalk or through a modem link. Chase opponents through a four-level maze. Requires 512K+, AppleTalk or Hayes compatible modem. $49.95. MacroMind, 1029 W. Wolfram, Chicago, IL 60657. NCP (Nov 86)

MicEdGames is a collection of five educational games, MicAlpha-★½ betize, MicTime, MicStates, MicMatch and MicSpell, supposedly for ages 5 to adult. Games are sometimes cute but generally poorly designed. Manual is poorly written. Some entertainment value. $19.95. MicEdWare, 4265 Midland Rd., Saginaw, MI 48603. NCP (Dec 87)

Mind Over Mac features five games. Entertainment for the whole ★★★★ family. Good graphics paired with synthesized sound and on-screen help. $49.95. Think Educational Software, 16 Market St., Potsdam, NY 13676. CP (Feb 86)

MoonMist is an introductory level text adventure game. This is a ★★★ typical haunted English castle story, not quite up to Infocom's best. It has four versions, so it's good for more then one play. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (May 87)

MSFL: Pro League Football is a professional football league simu-★★★★½ lation that encourages people to play people, not the machine. Fast with lots of stats. Quirky MS-BASIC behavior. Spotty manual. No LaserWriter support. Requires 1M+. $49. MicroSports, PO Box 15799, Chattanooga, TN 37415. NCP (Apr 88)

NewGammon is animated backgammon that will challenge even ★★★★ good players. Features include variable skill levels and strategies and options to play the Mac or watch the Mac play itself. An arcade-like high speed mode is included. $39.95. Newsoft, PO Box 3046, Newport Beach, CA 92663. CP

NFL Challenge simulates coaching and watching professional foot-★★★½ ball. Comes on two disks, one with program and *System,* the other statistical data. Play against either human or computer coaching. Plays are selected from pre-defined playbooks. $99.95. XOR Corp., 5421 Opportunity Ct., Minnetonka, MN 55343. NCP (Jun 87)

Ogre is a strategy tank game played on a hexagon grid. The ogre ★★★★ is an intelligent cybertank out to smash your command

MINIFINDERS



post. Customize your defense. Exceptionally good Mac interface. Has two-player option. $30. Origin Systems, 136 Harvey Rd., Building B, Londonderry, NH 03053. CP (Nov 87)

Orbiter puts a real space shuttle on the Mac screen. A multitude of ★★★★½ controls, intelligent on-board computer with speech capabilities, real-time graphics, and 16 distinct missions help this program succeed as both a game and a simulation. $49.95. Spectrum HoloByte, 2061 Challenger Dr., Alameda, CA 94501. NCP (Jul 86)

Orbquest is a fantasy role-playing adventure with better-than-aver- ★★★½ age puzzles and an excellent sense of humor. Not as sophisticated as some, but a good value. $49.95. QWare, PO Box 850415, Richardson, TX 75085. CP (Dec 86)

Patton vs. Rommel is a traditional-style strategic war game. It ★★★★ covers events in Normandy in 1944. While complex, it's well-designed and very playable. $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Apr 87)

The Pawn is an unusual British interactive adventure game with text ★★★½ and graphics. The unique interface has some drawbacks, but *The Pawn* has humor, social satire, is entertaining, and is challenging. $44.95. Requires 1M+. Firebird, PO Box 49, Ramsey, NJ 07446. CP (Mar 87)

Pinball Construction Set lets users create their own pinball ★★★★ games, as elaborate or as easy as desired. Uses *MacPaint* for backgrounds and has lifelike sounds (on 512K+ Macs). $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Jan 86)

Plundered Hearts brings gothic romance to interactive fiction in the ★★★½ familiar Infocom mode of puzzles, mazes, and riddles. You play a 17th century heroine dodging pirates to rescue her wrongly imprisoned father. Medium difficulty. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. CP (Jan 88)

Portal is an intriguing science fiction novel for kids that suffers from ★★★ having a poor interface. Storyline: All of humanity is missing and you have to search through a database for files that reveal the mystery. Nothing in the way of role-playing, and the Mac version is slow and buggy. $49.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (Oct 87)

Puppy Love is a combined game and teaching tool. As you teach ★★★★½ your puppy tricks and routines, you learn the basics of programming logic. Great fun for all ages. Does not run from a hard disk. $29.95. Addison-Wesley, Route 128, Reading, MA 01867. CP (Mar 87)

Quarterstaff (v. 1.2) is a fantasy adventure game of the typical ★★★★ "good vs. evil" variety. Ability to use characters in other adventures gives this game a lot of potential for development. Requires 1M+. $49.95. Simulated Environment Systems, 800 South Pacific Coast Hwy., Redondo Beach, CA 90277. NCP (Mar 88)

Seven Cities of Gold is an educational program masquerading as ★★★★ an adventure game and is practically unique in being equally good in both respects. You are to land (not the easiest part) in the New World and attempt to placate the natives, seed a few missions and collect gold. Nice work if you can get it. $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Jun 87)

Shadowgate is an icon-based graphic adventure. You, as the seed ★★★★½ of prophecy, must save the world from the evil warlock. Far surpasses all others with great animated graphics, sound, and adventure. $49.95. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP (Dec 87)

Shanghai challenges players to clear a board of all 144 tiles by ★★★★★ matching pairs of mah-jongg tiles and removing them. Terrific strategic options plus the ability to randomly generate new game boards keep this one fresh. $44.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (Nov 86)

Skyfox is a sophisticated 3D shoot-em-up. You're fighting tanks, ★★★ planes and enemy cities floating in the sky. Fast graphics, good sound, slick, on-board attack computer and many levels of difficulty will keep fans of this genre happy for hours. $39.95. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. CP (Oct 86)

Smash Hit Racquetball is an accurate and entertaining simulation ★★★★½ of a day on the courts. Digitized sound adds to the realism. Includes a hard disk install, unusual for a game. The low price makes this the perfect Mac gift. $19.95. Primera Software, 650 Cragmont Ave., Berkeley, CA 94707. CP (Dec 86)

Snake-Bar lets you guide a snake (or train or semi) through a maze, ★★★★ picking up objects that feed and make your snake grow. Options include changing languages, editing the maze, and an X-rated game. $15. (shareware). Georges Malamound, 37 Bis rue des Abbesses, Montmartre, 75018 Paris, France. NCP (Dec 87)

Solitaire Royale is a collection of eight solitaire card games. The ★★★★ Tour mode cycles through each game. Tournament deals the same hand for several players. $34.95. Published by Spectrum Holobyte, 2061 Challenger Dr., Alameda, CA 94501. CP (May 88)

Space Quest is a three-dimensional, animated adventure in which ★★★★ you play a janitor in a dicey situation. All you have to do is get off your ship before it explodes and save the Earnon System. Runs on any Mac. $49.95. Sierra On-Line, PO Box 485, Coarsegold, CA 93614. CP (Sep 87)

Star Fleet I: The War Begins! is a space opera of the *Star Trek* ★★★★ variety. Rise through the ranks from ensign to admiral in this serialized adventure. Requires 512K+. $55. Interstel, PO Box 57825, Webster, TX 77598. NCP (May 88)

Stationfall is the sequel (finally) to Infocom's excellent *Planetfall* ★★★★½ text adventure. Reunited with Floyd and sent to pick up requisition forms, you must solve the empty space station problem. As straightforward as other Infocom games; more so than some. $39.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP (Nov 87)

Strategic Conquest Plus challenges you to discover an unexplored ★★★★½ world and conquer it by manufacturing and deploying armies, ships, and planes. A two-disk game that doesn't support an external drive. Requires 512K+. $59.95. PBI Software, 1111 Triton Dr., Foster City, CA 94404. CP (Feb 88)

Sub Battle Simulator is a superior naval combat game. Sixty differ- ★★★★ ent missions and the ability to link missions keep it from ever getting boring. Requires 512K+. $39.95. Epyx, PO Box 8020, Redwood City, CA 94063. CP (Aug 87)

Tass Times in Tone Town is a slightly off-the-wall graphic adven- ★★★½ ture in which you need a flashy hairdo and a jumpsuit before you can get anywhere, and you pay for things with guitar picks. Decent puzzles, with a sense of humor. $44.95. Activision, PO Box 7287, Mountain View, CA 94039. CP (Jan 87)

The Toy Shop is a construction kit for building 20 different working ★★★★ model toys. Some parts can be customized. Manual gives clear instructions, but many toys are too complex for a child. $49.95. Broderbund, 17 Paul Dr., San Rafael, CA 94903. CP (Nov 86)

Trust & Betrayal: The Legacy of Siboot requires negotiating with ★★★★½ 6 artificial personalities in a struggle for power — not surprising considering that it comes from the maker of *Balance of Power*. Uses hieroglyphics to communicate in a fantasy world. Requires 512K+. Mindscape, 3444 Dundee Rd., Northbrook, IL 60062. CP (Mar 88)

Ultima III allows up to four characters to cooperate to explore the ★★★★½ vast wilderness of Sosaria. $59.95. Origin Systems, 340 Harvey Rd., Manchester, NH 03103. CP

Uninvited is an icon-based adventure game set in an extremely ★★★★★ haunted mansion. Since you access the parser by double-

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clicking, command choices are always visible — you don't waste time trying to figure out which words the program understands. It has animation and sound. $49.95. Mindscape, 3444 Dundee, Northbrook, IL 60062. CP (Sep 86)

Winter Games lets up to eight players compete against each other in Olympic events including figure skating, bobsledding, biathlon, and ski-jumping. Excellent animation, good graphics, good theme music. $39.95. Epyx, 600 Galveston Dr., PO Box 8020, Redwood City, CA 94063. CP (Mar 86)

Wizardry is an outstanding dungeon exploration adventure pitting a party of up to six characters against the guardian monsters of the evil wizard Werdna. Capture his amulet to earn your reward. Even after solving the game, you'll want to go back into the dungeon. $59.95. Sir-Tech, Charlestown-Ogdensburg Mall, PO Box 245, Ogdensburg, NY 13669. CP

WordPlay is a word game with over 50 crossword puzzles for different levels of expertise. User friendly, it offers on-screen Help menus. A Work mode allows development of new puzzles for the creative. $49.95. Palantir, 12777 Jones Rd., Houston, TX 77070. NCP (Mar 86)

World Builder is an adventure game construction set with what amounts to its own programming language. The whole program (language included) is easy to learn and produces commercial quality games. No support for the programming language, though. $79.95. Silicon Beach, PO Box 261430, San Diego, CA 92126. NCP (Apr 87)

Xyphus is a role-playing game pitting four characters (fighters or wizards) against multiple scenarios that grow increasingly harder. Excellent Mac interface and icon control. $39.95. Penguin, PO Box 311, Geneva, IL 60134. CP

Your Personal Poet creates personalized greeting cards on the Mac. Comes complete with four greeting cards and matching envelopes. Requires 512K+. $29.95. Computer Poet, 775 E. Greg St., Sparks, NV 89431. NCP (Jun 87)

Zork II is where the adventure continues in the underground empire. A wandering wizard keeps things interesting, though there's a way to beat him if you persevere. $44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP

Zork III is the final chapter in the trilogy. Players come up against the ultimate enemy — the Dungeonmaster himself. More closed-ended than previous *Zorks*. $44.95. Infocom, 125 CambridgePark Dr., Cambridge, MA 02140. NCP

MUSIC

ConcertWare+ is an enhanced version of *ConcertWare*. Has different instruments and can use any four of a set of eight at any point in a piece. Supports Adobe Sonata music font. $69.95. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Dec 87)

ConcertWare+MIDI is a composition and transcription program that can record multiple notes from a MIDI keyboard. Easy to use if you read music. Handles 8 tracks of 8 voices each. Requires 512K. Version 4.0. $149.95. Great Wave Software, 5353 Scotts Valley Dr., Scotts Valley, CA 95066. NCP (Dec 87)

Jam Factory is a program for performing complex manipulations on MIDI data in real time. Unique, entertaining, and very powerful, but requires lots of patience and practice. Requires 512K+, MIDI interface, and MIDI synthesizer. $189. Intelligent Computer Music Systems, PO Box 8748, Albany, NY 12208. CP (Oct 87)

Listen is an educational tool for ear training. It has both a piano keyboard and a guitar fretboard for the student to input notes, and offers a wide range of exercises. $99. Resonate, PO Box 996, Menlo Park, CA 94026. (Jan 87)

M is a music composition and creation program that works with MIDI data in real time. Unique, entertaining, and very powerful, but requires lots of patience and practice. Requires 512K+, MIDI interface, and MIDI synthesizer. $219. Intelligent Computer Music Systems, PO Box 8748, Albany, NY 12208. CP (Oct 87)

Master Tracks Pro is a full-featured, second-generation MIDI sequencer that adheres to the Mac interface very well. It's the first program to have graphic controller editing. Needs patch chasing for professional use, but it's still a rock-solid program. $350. Passport Designs, 625 Miramontes St., #103, Half Moon Bay, CA 94019. CP (Dec 87)

MIDIBasic is a simple, but highly useful routine for writing MIDI software. Good stuff. Sketchy documentation. Works with both *Microsoft* and *ZBasic*. Requires 512K+ plus Basic. $49.95. Altech Systems, 831 Kings Hwy, Shreveport, LA 71119. NCP (Aug 87)

Music Mouse is a music program in a genre all its own. Called an "intelligent instrument," *Music Mouse* gives you instant musical feedback as you move the mouse and type on the keyboard, which controls tempo, vibrato, volume, etc. $59.95. OpCode Systems, 444 Ramona St., Palo Alto, CA 94301. NCP (May 87)

Performer (v. 2.2) is the definitive MIDI sequencer, and is priced accordingly. Includes looping, SMPTE synching, 32 simultaneous Ins and Outs, unlimited overdubbing, and compatibility with *Professional Composer* for transcription. Requires MIDI interface and 512K+. $395. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan 88)

Practica Musica uses an interactive game and practice approach to teach music theory and ear training. Excellent training tool for the serious music student, it is also fun for anyone who wants to develop a trained ear for intervals, chords, and melodies. Requires 512K+. $125. ARS Nova Software, P.O. Box 40629, Santa Barbara, CA 93140. NCP (Nov 87)

Professional Composer produces performance-quality sheet music using Adobe's Sonata font. Scores can be created from scratch or imported from *Performer* (and can be exported to *Performer* for MIDI playback). Requires 512K+. $495. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan 88)

Studio Session consists of two programs, an Editor, and a Player, that produce music with six voices of digitized sound. Excellent program plus good manual make this a good buy. $89.95. Bogas Productions, PO Box 6699, Terra Linda, CA 94903-0699. NCP (Aug 87)

UpBeat turns the Macintosh into a front panel for a highly complex and versatile drum machine. Input patterns with mouse, MIDI Keyboard, or drum machine. Requires 512K. $150. Intelligent Music, PO Box 8748, Albany, NY 12208. CP (May 88)

HARDWARE & ACCESSORIES

AST TurboScan is a 300 dpi scanner with sophisticated graphics software. Scans at resolutions from 72 to 300 dpi. *SuperScan* software offers halftone, line art, and mixed modes. "Virtual memory processing" lets you scan images too large to fit in RAM. $1899. AST Research, 2121 Alton Ave., Irvine, CA 92714. Requires 512K+. *SuperScan* software included. NCP (Nov 87)

CMS S-140 SCSI Hard Disk is a very fast, high-capacity SCSI hard disk with a unity interleave and average access time of 18 msec. Holds 140M. Help, file transfer, and tape backup commands built in. *Hard Disk Partition* is a useful DA. Comes with a 6 ft. SCSI cable. $2995. CMS Enhancements, 1372 Valencia Ave., Tustin, CA 92680. (Jul 87)

DASCH is an external RAMdisk available in half, 1, and 2M sizes. Connects to a serial port. Speeds up operations 200 to 300%. Can be used as a printer buffer. Works with all Macs.

MINIFINDERS



512K, $395; 1M, $450; 2M, $545. Western Automation Laboratories, PO Box 3438, Boulder, CO 80307. (Feb 87)

Data Frame 40XP is a very fast, very quiet 40-meg external SCSI ★★★★ hard drive. Comes with a good and complete set of utility software. About as fast as a SCSI drive can be. Requires SCSI port, 512K+, new ROM. $1899. SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043.

DaynaFile hooks up to a SCSI drive to read MS-DOS disks in the ★★★★ Mac environment. Use Mac applications to manipulate data created with an IBM PC. Comes in both 5-¼ and 3-½ inch formats. $595 for single floppy. Dayna Communications, 50 S. Main St., 5th Floor, Salt Lake City, UT 84144. (Jan 88)

FX-20 is a good 20-meg external hard drive. Good utility software. ★★★★ Reliable and reasonably quiet. Sits next to Mac, has a large, oddly shaped case. Requires SCSI port, 512K+, new ROM. $1199. General Computer, 215 First St., Cambridge, MA 02142. (Feb 87)

Hard Disk 20SC is Apple's 20-meg SCSI hard disk. Reliable, fairly ★★★★ noisy unit. Good utility software, but no backup yet. Requires cable and terminator ($80). Requires SCSI port, 512K+, new ROM. $1299. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Feb 87)

Hewlett-Packard ColorPro Graphics Plotter is an eight-pen desk- ★★★ top plotter that requires third party software to drive it. Fonts are limited to an optional Graphics Enhancement Cartridge that requires some BASIC programming. $1295. Hewlett-Packard, 16399 W. Bernardo Dr., San Diego, CA 92127. (Feb 88)

ImageMaker shoots 35mm color slides direct from the Mac. Sup- ★★★★ ports most presentation software. Uses patterns to represent colors. Not fully compatible with the Mac II. Requires 512K+. $4995. *MacDriver* software, $149. Presentation Technologies, 743 North Pastoria Ave., Sunnyvale, CA 94086. (Feb 88)

IS/ONE tablet with **Penworks** software lets you use a corded or ★★★½ cordless pen or mouse and a high-res tablet for precise graphics input. Minor bugs with some applications and DAs. Keystroke macros can be launched from the tablet. Minimal documentation. Requires 1M+. $595 to $1145. Kurta, 4610 S. 35th St., Phoenix, AZ 85040. (Jan 88)

Jasmine Direct Drive 50 is a very quiet 1:1 interleave 50 megabyte ★★★★★ hard drive and one of the fastest SCSI drives around. A small fan keeps it cool, but it's still quiet. $1159. Jasmine Technologies, 555 De Haro St., San Fransisco, CA 94107. (Mar 88)

LaserWriter II NT is Apple's mid-priced PostScript laser printer. It's ★★★ faster than the LaserWriter Plus, with blacker blacks. Gray scale is less even than that of Plus. Requires 512K+. $4599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May 88)

LaserWriter II NTX is Apple's top-of-the-line PostScript laser print- ★★★★½ er. 68020 chip makes it very speedy; expandable to 12M; SCSI hard disk can be attached for fonts. Requires 512K+. $6599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May 88)

LaserWriter II SC is Apples's low-end QuickDraw laserprinter. Can ★★★ be upgraded to NT or NTX; resonably fast. Requires 1M+. $2799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May 88)

MacBottom 45 SCSI and Internal Modem has a modem that fits ★★★★½ into the top half of the 45-megabyte SCSI hard drive case. Comes with *HFS Backup* and *Eureka*. $1795. Personal Computer Peripherals, 4710 Eisenhower Blvd., Tampa, 33634. (Oct 87)

MacBottom HD21 is a very low (about 2 inches high), external 20- ★★★★★ meg hard drive. Fits under the Mac. Very quiet, very reliable. Good utility software, including *HFS Backup*. Requires SCSI port, 512K+, new ROM. $1195. PCPC, 4710 Eisenhower Blvd., Tampa, 33634. (Feb 87)

MacCharlie's components slip around the Mac and convert it into ★★★★ an IBM PC clone. Amazingly, it works well. The enlarged keyboard has a few bugs but is a joy to use. $995. Dayna Communications, 50 S. Main St., Salt Lake City, UT 84144. (Dec 85)

MacIntizer is a graphics tablet and absolute positioning device that ★★★★ replaces the mouse. Various scales are possible. $599. GTCO Corp., 7125 Riverwood Dr., Columbia, MD 21046.

MacLarger is a 12-inch external monitor for 512K machines on up ★★★ to the SE. Displays the same number of pixels as an internal monitor, only one-third larger. Bigger and brighter, but less crisp than the Mac's own screen. $449. Power R, 1606 Dexter Ave. North, Seattle, WA 98109. (Apr 88)

Mac-101 is a keyboard alternative that has a good feel to it. Has a ★★★★ keypad, 15 function keys, and more. The *101-Keys* desk accessory lets you define macros. Comes in an ADB version for the SE and II. Requires 512K+. $169.95. DataDesk International, 7650 Haskell Ave., Van Nuys, Ca 91406. Software NCP (Apr 88)

MacSnap Plus 2 is a 2M memory upgrade for the Mac Plus. The ★★★★ board has 256 kilobit chips. User installable. Not compatible with existing big screens or internal hard disks, and can't be expanded further. $399. Dove Computer, 1200 North 23rd St., Wilmington, NC 28405. (Jun 87)

MacTable is an elegant Danish worktable that holds a Mac and ★★★★½ printer with room to spare. The 30-inch deep by 60-inch wide table is made of particleboard and must be assembled. Cabinet is optional. Table, $269; cabinet, $129. ScanCo-Furn, PO Box 3217, Redmond, WA 98073-3217. (Mar 88)

MacTablet is a stylus-driven graphics tablet. Users can easily ★★★★ sketch or trace art using this absolute-positioning device. Has a working area the size of the Mac screen. Allows concurrent use of the mouse. $495. Summagraphics Corp., 777 State St. Extension, Fairfield, CT 06430. (Jan 86)

MacTilt/MacTilt SE is a Mac (and external drive) holder that allows ★★★★ a full range of swiveling and tilting. Very strong, this well-made unit is also very easy to use. $99.95. Ergotron, PO Box 17013, Minneapolis, MN 55418.

MacVision is a digitizer that uses an ordinary video camera for ★★★★ input. Capable of extremely fine results and special effects. Easy to use and well-documented. $349.95. Koala, 269 Mt. Hermon Rd., Scotts Valley, CA 95066.

Magic Digitizer is a hardware digitizer that works with video cam- ★★★★ eras. With *LaserMagic* software you can generate 300 dpi images (in PostScript). Requires 512K+. Digitizer with *Magic* software, $399.95; *LaserMagic* software, $49.95. New Image Technology, 10300 Greenbelt Rd., Seabrook, MD 20706. NCP (May 87)

Microtek MSF-300C is a 300-dpi flatbed scanner. Really fast when ★★★½ used with optional MS-SCSI/C adapter. Comes with *VersaScan Plus* software (NCP) to scan and manipulate image. Saves images in a number of formats including TIFF and *MacPaint*. $1895. Microtek Lab, 16901 S. Western Ave., Gardena, CA 90247. (Dec 87)

Migent Pocket Modem is a 300/1200 baud portable modem ★★★½ about the size of a 3 X 5 index card. Comes bundled with *MacTerm* 2.0, Borland's telecom DA. Manual is confusing, and tech support is minimal. $259. Migent, 865 Tahoe Blvd., Incline Village, NV 89450-6062. (Nov 87)

Mouse Mover is a mouse pad-type surface that snaps onto the ★★★★½ bottom of the mouse like a roller skate, freeing it up to glide over desk or mouse pad with ease. 99 tiny ball bearings at three strategic points. Mouse glides faster and saves on mouse wear and tear. $19.95. Magnum Software, 21115 Devonshire St., Chatsworth, CA 91311.

Moustrak is a fabric covered foam mousing pad. It will increase the ★★★★ efficiency of your mouse while helping to keep it clean. Pad comes in a variety of colors. Particularly useful in the typical

MINIFINDERS

office desktop environment. $10. Moustrak, 3047 St. Helena Hwy., St. Helena, CA 94574.

NetModem is a 1200-baud modem that can be accessed by all ★★★★ users on an AppleTalk network. The modem's display lights and the dial tone are simulated on-screen. Requires 512K+. $599. Shiva, Suite 1200, 222 Third St., Cambridge, MA 02142-9919. (Feb 88)

NoLabelSystem is a plastic permanent labeling system in which ★★★★ users slide new tabs into a transparent plastic case on the disk. The tabs stick out of the case slightly, making them easier to read while in the drive. $19.45. Weber & Sons, 3468 Hwy. 9, Freehold, NJ 07728.

One Plus One is a user-installable memory upgrade for a Mac Plus. ★★★★½ Adds 1 megabyte of RAM to the 1M already there. Simple one-evening project. Includes MacBreeze, an excellent small fan. Requires Mac Plus. $375. Levco, 6160 Lusk Blvd., San Diego, CA 92121. (Aug 87)

Personal LaserPrinter is a non-PostScript laser printer at a great ★★★★ price. Clumsy workarounds required in some applications. Printing can be slow. Requires 1M+. $1999; Fonts Plus, $299. General Computer, 580 Winter St., Waltham, MA 02154. (Apr 88)

Personal Writer PW15 S is a tablet-based handwriting recognition ★★★★ system that also allows graphics and macros. Number of misread characters is too high for general word processing. Requires 1M+. $895. Personal Writer, 1801 Ave. of the Stars, Los Angeles, CA 90067. Software NCP (Mar 88)

PhoneNET is an AppleTalk-compatible network. Network can ★★★★★ be up to 3000 ft in length. In-place, unused phone cabling can be used for network, and can be combined with AppleTalk on same network. $49 per node. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. (Dec 86)

SuperRam 2 and SuperRam 4 are 2- and 4-megabyte RAM up- ★★★½ grades. Should be dealer installed but can be (carefully) user installed. SuperRam 2 includes RAM adaptor module, 1-meg memory module, modified power cable, jumper and fan. SuperRam 4 adds power supply booster and two 1-meg memory modules. Not compatible with most big screens. $499. SuperMac Technology, 295 N. Bernardo, Mountain View, CA 94043. (Oct 87)

ThunderScan replaces the ribbon cartridge in an ImageWriter, ★★★★ which is required to use it. Laser scans art that can be run through the ImageWriter, producing high-quality digitized images. The images can be manipulated as they are created or afterward. $249. Thunderware, 21 Orinda Way, Orinda, CA 94563.

TimeWand is a bar-code reader with a built-in time/date stamping ★★★★ clock. Can be used with *TimeWand Manager* software, a database that's extensive though difficult to use. Poor docs, but good support. Requires 1M+. *TimeWand* 2K version, $198; *TimeWand Manager,* $489. Videx, 1105 NE Circle Blvd., Corvallis, OR 97330-4285. (Dec 87)

TV Producer is an add-in card that overlays Mac graphics and text ★★★ onto a video signal. Software is clumsy to use. Requires Mac II, Apple video card, and video souce. $599. Computer Friends, 14250 NW Science Park Dr., Portland, OR 97229. Software NCP (May 88)



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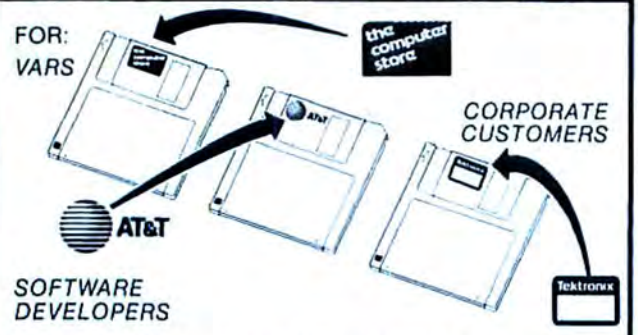
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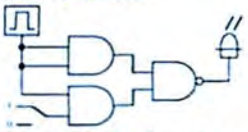


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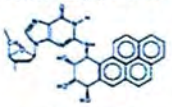
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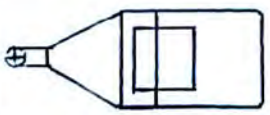
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by John C. Dvorak

A/UX: Apple's Worst Mistake

Apple's enthusiastic adoption of *A/UX* (aka UNIX) is the biggest blunder in the history of the company. Make no mistake about it: the Lisa debacle, the "twiggy" floppy, and the premature release of the buggy Apple III will pale in comparison to the decision to support and encourage *A/UX* applications. Thank you, John Sculley.

Let's examine all the implications of this fiasco. First off, here's a company that has been fighting tooth and nail to protect its proprietary market position. Gangs of grimacing lawyers sue every Tom, Dick, and Harry who tries to clone an Apple product. Now Apple adopts an operating system that allows easy ports to every competitor in the world. It's not as though the Apple UNIX were some sort of oddball option like the p-System or MS-DOS on a card. This UNIX will eventually have the Mac interface. It's a corporate thrust.

Already I'm told that people have seen the *A/UX* version of *PageMaker* 3.0 running on a Steve Jobs' NeXT computer. The port from *A/UX* to any other UNIX is a piece of cake. So much for the software advantage of the Mac.

I was given a demo of the *Wingz* spreadsheet product and was told that it was originally written for *A/UX* with assistance from Apple. The company is working on the native Mac OS version at the same time as it's porting it to Sun, IBM, and every other imaginable machine. Why doesn't Apple simply sign its own death warrant? If nothing else, Apple is putting itself into a price war with this tack. Why should anyone pay $10,000 for a Mac II if the package a person wants (such as *PageMaker* 3.0) runs as well on a cheaper machine?

Apple, of course, is aware that Sun Microsystems, NeXT Computers, and presumably others will be rolling out low-end workstations that will compete with the Apple Mac II. These are all UNIX boxes. Instead of holding tough and letting these clowns flop, Apple has decided to regroup with this UNIX strategy. Does Apple hope to compete with Sun in the UNIX marketplace? Sun is teamed up with the inventor of UNIX, AT&T, and has the top UNIX guru, Bill Joy.

On the other hand, Apple's strength is its marketing prowess. There is no way Sun or NeXT or AT&T could possibly beat Apple



mano a mano unless Apple concedes some points — gives itself a handicap. It just did.

Worse, it's now saddled with, of all things, UNIX. The theory behind the Apple Mac is that although it's difficult to program, the end-user is the beneficiary of a simple-to-use and consistent interface. UNIX turns the formula around. UNIX is easy to program for — write some code in C and it will run on a UNIX system with no questions asked. Unfortunately, though, the user side of the picture is just the opposite of the Mac formula. Only a college kid with time on his hands learns the ins and outs of UNIX. UNIX means the opposite of intuitive. The commands are arcane, the structure unusable. Simply put, UNIX sucks.

When John Sculley, at the UniForum meeting in Dallas, said Apple is introducing *A/UX* because "Our customers wanted it," I had to laugh. What Mac customer wants UNIX? Obviously it was a few fresh-from-college rubes at Apple who promoted the whole idea. Here's the Pepsi challenge. Take a good look at anyone who tells you UNIX is great — the best. Tell me what you see. One thing for sure — you never see a mature individual. You see a kid. Usually a college kid. The only mature adults who promote the thing have a vested interest in its success. They use the college kids as their foil. Indeed, it works. Dopey executives figure these green kids must know something because they have bachelor's degrees in computer science. So they go along with the program.

The program always yields the same results — disaster. The low-end of this business does not need or want UNIX. Never has, never will. Since the days of the 8080 machines a decade ago, these glassy-eyed UNIX nutballs have been pushing UNIX and dooming one firm or another to failure. Although the user of a $30,000 Sun workstation may think UNIX is great as a development tool (although he has to hand patch it to get it to work "just right"), the user of a $3500 system hasn't the time to deal with UNIX.

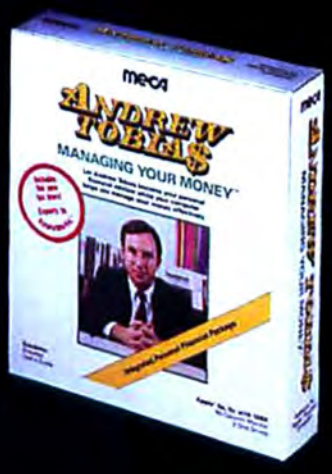
The most recent low-end UNIX machines were the AT&T 7200 and the Fortune Systems 16:32. To make these things marketable, both companies had to encase UNIX in a bulletproof "shell" program, adding overhead and thus sapping already poor UNIX performance. Both machines are defunct and Fortune is dead broke. Apple is headed down the same path. Apple will start this doomed journey by installing its famed user interface as a shell program on top of UNIX. You can kiss response time and tight "feel" goodbye. Moreover, Apple is promoting this interface as a standard at X-Windows meetings. Oh, if you don't know, all the UNIX people are trying to standardize a windowing environment (called X-Windows) that will run on top of UNIX. So what is Apple doing in these meetings?

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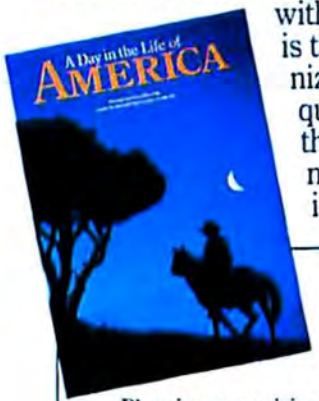
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